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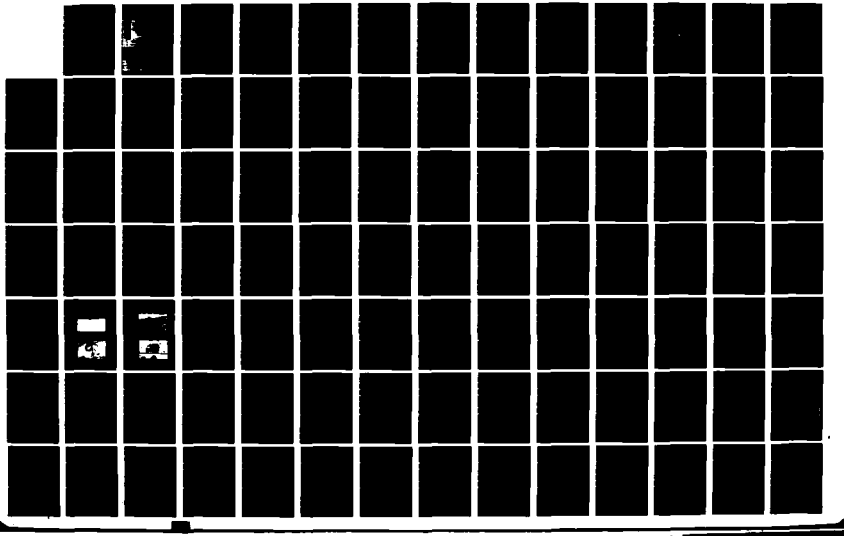

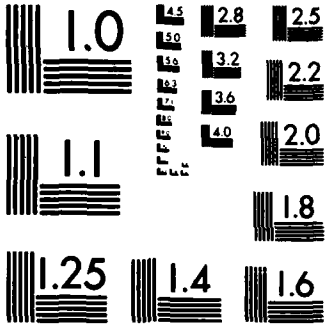

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MERCED COUNTY STREAMS PROJECT,
HAYSTACK RESERVOIR, CALIFORNIA
INTENSIVE CULTURAL RESOURCES SURVEY

MERCED COUNTY STREAMS PROJECT, HAYSTACK RESERVOIR, CALIFORNIA INTENSIVE CULTURAL RESOURCES SURVEY

performed under
Contract #
DACW05-81-C-0097

by
PEAK & ASSOCIATES, INC.
8167A Belvedere Ave.
Sacramento, California 95826

for
DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
650 Capitol Mall
Sacramento, California 95814

March 25, 1982

ABSTRACT

Peak & Associates have undertaken the cultural resource survey of the proposed Haystack Reservoir. The project is part of the U.S. Army Corps of Engineers' Merced County Streams project. The area to be impacted comprises 510 acres, including the gross pool of the proposed reservoir, as well as associated constructional features. Four prehistoric midden sites were found and recorded within the reservoir boundaries, and one midden was located just outside the project boundaries. All have been recommended for nomination to the National Register. Mitigative alternatives are predicated upon the status of the project, the projected impacts, and the nature of the resources. The potential impacts to the resources are of two kinds: destruction by construction activities, and inundation. Preservation was emphasized as the best mitigative alternative; if not possible, then the mitigative measures proposed were based upon the degree of expected impacts. The results of the survey were hampered by a lack of temporally diagnostic artifacts. The overall consensus of the data argues for a late manifestation in the Upper Emergent Period for all of the prehistoric resources found, but whether Miwok or Yokuts could not be established from the surficial evidence.

ACKNOWLEDGEMENTS

No large archeological project/report is the product of one individual. Rather it is a cooperative effort from many people at all stages of the project. In acknowledgement of this, we wish to thank not only the people who contributed with their direct involvement but all others who offered support and encouragement.

We are especially appreciative of the cooperation and assistance offered by the U.S. Army Corps of Engineers' personnel who helped in interpretation of plans and hydrologic data. Patti Johnson, District Archeologist, participated in field review and has provided us with positive critical review of the report during the various preparation stages.

There is no doubt that the field crew deserves a very large share of the credit as they were more than competent and meticulous in identifying and recording the complex cultural resources within this study area. It was a pleasure to have excellent comprehensive field notes and illustrations as the preparation of the report was made so much easier. Despite the extremely hot weather and the long daily walk to and from the work areas, the crew members maintained a high quality or work and retained their good humor. Our deepest thanks to our crew chiefs: Robert Gerry, Richard Kardash, Larry McKee, and Melinda Peak; and to the technicians: Barry Boyer, Herb Dallas, Hannah Gibbs, Stuart Guedon, Sherri Gust, Les Harville, Paul Neimoyer, Patricia Perkins, and William Slater.

The Native American Observer was John (Rusty) Brocchini from the American Indian Council of Mariposa County. Rusty was a great asset to the team, providing insight into Native American values and concerns and also participating in all phases of the field work. His most valuable contribution, in terms of the field work, was in making meticulous scaled drawings of the petroglyphs at the several loci. He also acted as liaison with the interested Native American community. We also appreciated the time and effort expended by the Indian people.

The excellent maps, historic feature illustrations and petroglyph replications are the product of Robert Gerry, Stuart Guedon and Rick Kardash, who expended hundreds of hours on them.

Jeanne Muñoz deserves a great deal of credit for acting as our coordinator with the Native American people and for compiling the historic overviews. She was ably assisted by the historic researcher, Melinda Peak.

Dr. L. K. Napton, California State College, Stanislaus, was more than cooperative in providing permanent trinomials for the cultural resources even though it was done with tight time constraints. His office insured a careful concordance for previously recorded sites and those identified during the 1981 field survey.

Jeffrey Miller made a special trip from Los Angeles to accompany us for one day on the Bear Creek Reservoir survey. He had a great deal of information on the location of many sites--expecially the rock art loci. We are very appreciative of his interest and help.

Perhaps one of the more important persons involved in the report compilation was our tireless office manager, Lori Lyford. She ran innumerable errands, coordinated the work flow, and typed several drafts, all site survey forms, and two of the final reports. She has somehow retained her sense of humor throughout the months of work. Without her diligence, the final product could not have been achieved.

To our typists, Carol Larsen and Teresha Legatos, who produced three of the final reports, we give our deepest thanks.

Finally, we wish to thank the landowners who gave us information on access roads and on resources within their property. To all other persons who provided information, opened archives, and otherwise assisted, please accept our gratitude.

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INTRODUCTION

An intensive cultural resource survey was undertaken within the boundaries of the proposed Haystack Reservoir. The work undertaken was part of the Merced County Streams project (Map 1), which is a large flood control project undertaken by the U.S. Army Corps of Engineers. The entire project would consist of the enlargement of Burns and Bear dams, the construction of Haystack and Castle dams, and downstream channel improvements. The purpose of the project is to temporarily store runoff behind ungated dams to prevent downstream flooding. There would be no permanent pools (Map 1).

The cultural resource survey was ordered in accordance with Executive Order 11593 and Public Law 93-921, which requires that all cultural resources which may be impacted by the project be located, inventoried, and evaluated for eligibility to the National Register of Historic Places.

As presently designed, the proposed Haystack Reservoir will encompass 452 acres along Black Rascal Creek and its tributaries. The total acreage involved, including the spillway, the dike, the dam site, and the improvements to the access road, will total approximately 510 acres. The gross pool elevation will be 301.4 feet, or approximately 36.7 feet in height from the bottom of the dam.

The project area was surveyed once before by Ancient Enterprises in 1976 (Clewlow 1976), as an earlier portion of the U.S. Army Corps of Engineers' Merced County Streams project. The archeological team from Ancient Enterprises surveyed a 50-meter swath on either side of Black Rascal Creek and other drainages within the proposed project area. As well, they inspected 10 additional acres from two selected spots, for an estimated total of 17.3 percent of the project area. Their results were negative.

The impacts will derive primarily from two sources: quarrying of construction materials and inundation (wave action erosion). Other impacts due to inundation may have to be considered.

Evaluation of the significance of each resource was predicated upon its potential to address pertinent regional research questions. The assessment is based upon the surficial evidence, both artifactual and eco-factual. The limitations inherent in a cultural resource survey are recognized.

The mitigation alternatives proposed are based upon the nature of the resource, its information potential, and the nature of the impacts. The degree of impact to be expected from ungated flood control dams, in comparison to the more studied gated dams, is a question which has not been directly faced before to our knowledge, and our recommendations are predicated with this difference in mind.

The ethnohistoric and historic research has been undertaken by an ethnohistoric consultant and a historic researcher. The ethnohistorian's duties consisted of establishing a liaison with concerned Native American groups, soliciting their knowledge concerning culturally important resources in the project area, conducting primary source archival research and interviews, both on the Native Americans and the later ethnic groups of the historic period, the settlement systems, notable personages, and subsequently incorporating this knowledge into a comprehensive report. The historic researcher helped in the archival research, and interviewing of consultants.

Prior to the fieldwork, the principal investigator and the ethnohistorian met with the American Indian Council of Mariposa County to obtain information on any Native Americans who had knowledge pertaining to the project area. They also suggested a number of Native Americans who would serve as observers. The individual who accepted proved to be a valuable member of the crew, and he provided insights into the interrelationships of sites and features.

SCOPE OF WORK

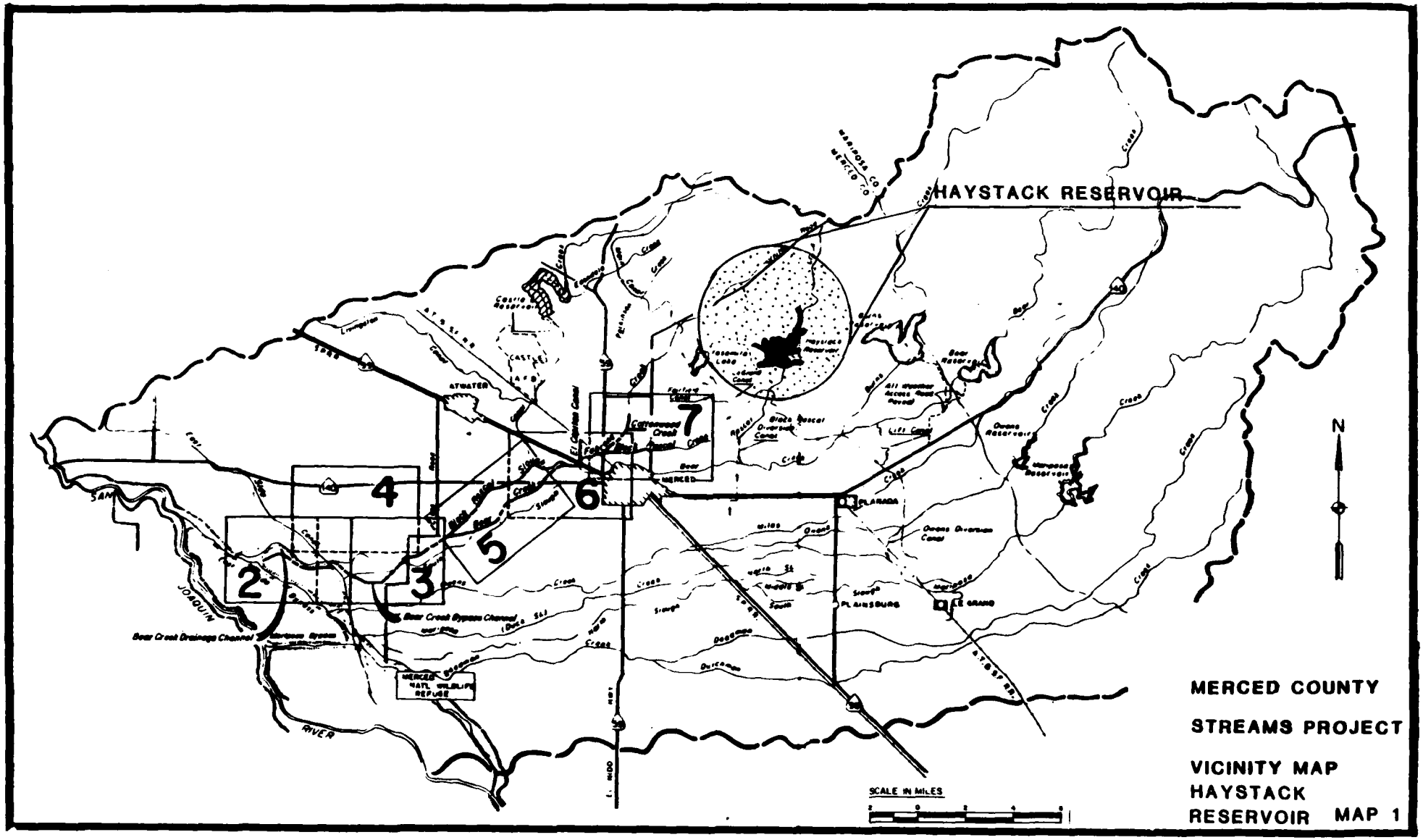
Purpose

In accordance with Executive Order 11593 and Public Law 93-291, all cultural sites which may be impacted by project construction will be located, inventoried and evaluated for possible nomination to the National Register of Historic Places. The purpose of this work is to intensively survey and inventory the cultural resources at the proposed Bear, Castle, Burns, Haystack reservoirs, and the Downstream Channel Improvements, Merced and Mariposa counties, evaluate all sites for National Register eligibility and prepare a plan for possible mitigation and preservation actions.

Project Description

The project will consist of (1) two new detention dams (Castle, Haystack Mountain), (2) enlargement and modification of two existing detention dams (Burns, Bear), and (3) about 17 miles of levee and channel modifications.

As designed, the Bear Reservoir area will consist of approximately 836 acres to include the dam and spillway, reservoir pool, borrow areas and access roads. Castle Reservoir will consist of about 859 acres to include the dam and spillway, reservoir pool, borrow areas, access roads and dikes. Haystack Reservoir will consist approximately of 452 acres. The spillway, the bottom of the dam, and the access roads will increase the acreage to 510 acres. The renovation of the Burns Dam will increase the gross pool acreage to 2,179 acres. The


HAYSTACK RESERVOIR
ATWATER
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PLAINSBURG
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SCALE IN MILES
MERCED COUNTY
STREAMS PROJECT
VICINITY MAP
HAYSTACK
RESERVOIR MAP 1

associated structures will increase the acreage to 2,310 acres.

Research Design

The Contractor will be responsible for preparation of a research design. The Contracting Officer will review and approve the research design prior to its implementation.

The general overall research design in the Technical Proposal shall present the research needs or problem do ins the Contractor anticipates accomplishing under this sol tation. Contractors should include, at a minimum, informati on the types and extent of study and analyses estimated to be nec sary to fulfill these research needs. Archeological, histo al, ethnohistorical, and architectual aspects must be addres The Contractor's proposed overall research design will b rganized into separate sections for prehistoric archeology, historic archeology, and cultural anthropology. The accepted overall research design may be reviewed, revised and/or modified, as necessary, during the conduct of the program.

Description of Report

Prepare five separate and complete, one for each reservoir and the downstream area, cultural resources intensive survey reports on the effects of the projects on archeological and historical resources at Bear, Castle, Burns, Haystack, and the Downstream areas by accomplishing the following:

Peak & Associates will review previous cultural investigations pertinent to the project area. The review should include a statement summarizing all known cultural sites, their locations if close to or within the project area, and findings from previous surveys, investigations, and ethnographic and historic background statements. Sources for the archival review shall be fully identified and shall include, but not be limited to, county records; the records of the State Historic Preservation Office; the California Archeological Sites Survey Regional Office, Stanislaus; the National Register of Historic Places; the California Historical Landmarks; "Final Report on the Archeological Reconnaissance of the Merced County Stream Project, California and the report, "Cultural Reconnaissance of El Capitan Canal, Black Rascal, Fahrens and Cottonwood Creek."

Local residents, personnel at public institution, members of local historical societies and others who may have relevant cultural resources information shall be consulted. Such persons contacted shall be identified in the report in the Appendix.

Conduct an intensive on-the-ground survey of Bear Reservoir consisting of approximately 836 acres; of Castle Reservoir, consisting of approximately 760 acres; of Burns Reservoir, consisting of 2,310 acres; of Haystack Reservoir, consisting of 510 acres, and the Downstreams Channel Improvements, designed

to locate, inventory, and evaluate for possible eligibility to the National Register of Historic Places all sites within those areas.

Prior to initiation of field work, submit a survey plan for approval by the Government. The survey plan will identify the intended survey methodology in detail for both historic and prehistoric sites.

Assess each located cultural site for National Register of Historic Places significance and eligibility. Determination of significance shall be defined in regards to National Register criteria, research potential, and possible contributions to local, regional, and national history and prehistory. The basis for evaluation shall be stated explicitly for each site. This information shall appear in tabular form also.

Prepare nominations using Form 10-360, for all historic and prehistoric sites which may be eligible for the National Register of Historic Places. These sites may be considered individually, as a district, or any combination thereof. The level of documentation required for the nomination forms is outlined in the Federal Register, Vol. 43, No. 183, Wednesday, September 21, 1977.

Include a statement as to whether any, and which, sites of previously identified prehistoric or historic significance designated by federal, state, or local government will be affected.

Provide for each located cultural resource scaled, detailed maps showing site composition, extent, presence of midden, and artifact site features such as bedrock mortar outcrops, petroglyphs, historic structures, existing impacts to sites, and the relationship of sites to nearby roads, trails, trees, and other topographic features. Mapping shall be done with surveying instruments--such as metric tape and compass--and shall be of good quality. Details of other features such as bedrock mortars, petroglyphs, or historic structures shall be fully described and illustrated by photographs (with scale) and line drawings. Separate appropriate feature records for each shall be prepared. Sites previously mapped in the 1976 survey shall not be remapped; however, site records and maps shall be corrected in the event incorrect or additional information is found.

Provide fully completed site survey records for all cultural resources located, and prepare a map showing all cultural resources in the project area.

At least three locations for each midden site shall be sampled so that midden depth, composition, and other information useful in determining possible eligibility to the National Register of Historic Places can be defined. The location of these borings shall be shown on site maps. Findings shall be

described in an appendix. Information pertinent to National Register evaluation shall be discussed in the main report in the section on "Evaluation of Significance for National Register of Historic Places."

Suggest protective and/or mitigative alternatives for each site. For each site identify the alternative which appears to be most feasible and discuss the basis for the decision.

Prepare time and cost estimates for accomplishing the mitigative and/or protective work. Sufficient detail shall be provided to enable Government review of labor efforts for field and laboratory work, possibly special analyses, and other expenditures. The above information shall be provided for each site.

Surface artifactual materials discovered during the course of the survey will not be collected. Any culturally or temporally diagnostic artifacts which are (a) seen in the field but left at the cultural site, or (b) obtained from auger borings, etc., will be photographically recorded.

Identify those sites which should be test excavated (in addition to the three auger samples) in order to determine their significance. Suggest the amount of testing, in terms of 1 x 1 meter excavation units, and describe what variables were used to arrive at that quantity for each site. Prepare cost estimates for such efforts.

BACKGROUND SECTION

Environmental Background

General Environmental Setting. Although one physiographic region, the San Joaquin Valley displays a diversified environmental pattern: arid foothills on the west, swampy valley floor, gently rolling eastern alluvial plains, and the oak parklands of the lower Sierran foothills. In terms of prehistoric land use, the restrictions or advantages of each area are reflected by the known settlement pattern.

Geologically, the Central Valley is a great geosynclinal trough which has existed from Tertiary times (Hinds 1952). Bounded on the east by the Sierra Nevada massif and on the west by the Coast Ranges, the trough follows a northwest-southeast axis reflecting the strike of the Sierra and Coast Ranges. The southern boundary of the valley is formed by the Tehachapi Range, while the Cascades and the Klamath Ranges rim the northern extent. The San Joaquin Valley is, in part, drained by the San Joaquin River, which flows west from the Sierra, bends sharply north at Mendota, and trends northwest to empty into the maze of sloughs and marshes of the Central Valley Delta into Pacific Ocean. The southern end of the San Joaquin Valley is not drained by the San Joaquin River. The area extending from

the Kings River to the base of the Tehachapis has no surface outlet under normal conditions of runoff and rainfall. Drainage is into a series of now extinct or controlled playas. The valley floor is a long alluvial plain gently uplifting to dissected fans derived from deposition by the degrading streams of the surrounding mountain ranges. Soils within the valley are generally devoid of natural rock constituents, as the coarser materials tend to drop near the head of the fans, leaving the finer silts which carry further out into the valley.

The San Joaquin Valley lies in the rain shadow of the Coast Ranges, which effectively blocks much of the available moisture. Storms are diverted over the region to deposit their water content on the higher Sierra to the east. As a consequence, the area suffers from a deficient rainfall. The chronic pattern of aridity, apparently one of long standing, is marked on the west side, where few streams of perennial flow are established. Runoff from the infrequent storms is rapid and water disappears within a short period of time. In contrast, the east side, recipient of the captured rainfall and benefiting from stream flow headquartering in the large catchment basins of the upper Sierra ranges, contains numerous perennial rivers and streams. Erosion is more vigorous, a result of the high annual rainfall, and alluvial fans stretch westward out into the trough. The inequitable runoff has resulted in uneven deposition of sediments with the gradual movement of the axis of drainage far to the west.

The aridity of the west was reflected by the restricted vegetation growth. Arboreal communities were restricted to canyons of perennial streams, with sparse grass cover and some low-growing brush over the hill slopes and fans. The east side, with a correspondingly higher precipitation, had a different vegetative pattern. Oak groves, where adequate water was available, extended out onto the valley floor. Stream channels, sloughs, and lake shores were fringed by cottonwoods, willow, and sycamore. The stretches between stream courses, beyond the percolation limits of ground water, were open grasslands. The low-lying valley trough, with sluggish streams near to grade, supported vast tule marshes and ponds with dense arboreal stands along rivers and streams.

The faunal communities of each environmental zone had a wide range in both variety and number. Waterfowl, attracted by the large, open waterways, swarmed around the ponds and sloughs. Fish, shellfish, and turtles were abundant, while small mammals and larger game were plentiful in marshlands and on the open plains. In all, the San Joaquin Valley provided a rich resource base for the prehistoric population.

The east side of the Great Valley is covered by a perennial grassland which differed from other prairies of the world, both in regard to the perennial species present and the large number of annuals. Bunchgrass was the dominant grass type throughout the Great Valley. It was associated with many other species of grass, sedges, and flowering plants depending upon the local

ecotone. The two important edaphic habitats within the grasslands are the alkaline flat community and the "hogwallow" or vernal pool community. The alkaline flat community covered large areas of the valley and Moraga clearly describes how arid it is during the late summer when his expedition passed through the project area in 1804 (Cook 1960:284). The vernal pool community is present on the east side of the valley wherever grasslands are underlain by hardpan, which creates pools in the winter. These pools are characterized by an unusual ecotype where a vernal flora has evolved (Western Ecological Services Co. 1981).

Project Specific Environmental Setting

The proposed Haystack Reservoir is located on the very edge of the valley floor, northeast of the city of Merced. The valley floor in this locale is a fairly flat plain dissected by the wide, shallow intermittant Black Rascal Creek and its tributaries. The plain is formed by the North Merced Gravel pediment and the underlying clays and mudstones of the Mehrten formation. The creek more easily erodes the lateral clays than the more resistant mudstones beneath it and, as a result, the creek is 20 to 30 meters wide in sections.

The rainfall basin, where Black Rascal Creek begins, is located five miles north near China Hat Mountain. It flows generally southwest, three or four miles to its enforced junction with Bear Creek, via the Fairfield Canal. Originally, Black Rascal Creek flowed to a junction with Fahrens Creek, on the north side of Merced.

The "mima mound" vernal pool relief, so prevalent on the east side of the project area, is not so common in the central portion of the proposed reservoir area. The North Merced Gravel pediment forms a layer resistent to water absorption and thus allows pools to form. It has been eroded away in much of the project area by Black Rascal Creek and its tributaries. The surrounding terrain is much more undulating due to a lesser degree of dissection of the pediment.

The proposed dam site is in a narrow low ridge, approximately 10 or 15 meters in height, which trends east to west. The point at which Black Rascal Creek has breached this ridge, is where the dam will be constructed. The ridge is capped by the erosion resistant North Merced Gravels. A large, intermittent pool is found at the base of the ridge, just outside the project area. It is noted on the USGS Haystack Mountain 15' series quadrangle and is associated with a spring, which likely flows only during the wet seasons. The spring is part of a series which flows at the contact between the Valley Springs Formation and the overlying sediments (U.S. Army Corps of Engineers 1981: 54).

The vegetation consists primarily of introduced grasses and tarweed. The evident summer aridity and few standing

pools of water suggest that the current grassland environment is of long-term duration. There are no trees associated within or near the project area.

There is no evidence of mining activities as found at the nearby Burns and Bear creeks. If mining occurred along Black Rascal Creek, evidence for such will be found further upstream before the creek reaches the valley floor.

Archeological Background

The Haystack Reservoir area was surveyed by Clewlow (1976) as part of the original cultural resource survey for the Merced County Streams project. Fifty-meter swaths along parts of Black Rascal Creek and its tributaries, and a total of 10 acres from two separate localities, were examined by the survey team. The total area comprised about 17.8 percent of the areal extent of the proposed reservoir. The results of this partial survey were negative.

The establishment of a chronological framework is a necessary step in which to discuss the cultural events evident from the analysis of the archeological record and other sources. Fredrickson (1973), as part of his dissertation research on the Coast Ranges, proposed a new chronological scheme for the prehistoric settlement in California. While the majority of his results are not directly applicable to the Sierran foothills province, his revision of the terminology for major temporal units is useful. The previous temporal concept, used in California prehistory, is the Horizon (see Fenenga 1977). It has proved useful over the years to categorize the various archeological entities uncovered, but it does suffer from a few disadvantages. The primary fault in the concept is its blending of time units with archeological entities--i.e., the Windmiller facies has served both as a time period and as a Delta-based archeological entity (i.e., the Early Horizon).

Fredrickson (1973:116) has simply separated these two levels of conceptual categories. Time and archeological entities of immediate importance to the present report are his temporal units called periods. The dating of them will probably need revision from time to time, and probably by region, since cultural developments may proceed in a mosaic fashion. His periods are named for the dominant stage (the socioeconomic level of development), and four stages are recognized: Early Lithic, Paleo-Indian, Archaic, and Emergent. This does not imply that all archeological entities found within one period will be characterized by some level of socioeconomic development. The periods recognized are the Early Lithic; the Paleo-Indian; the Archaic, which is divided into two sub-periods, Lower and Upper; and the Emergent, also divided into two sub-periods. The correspondence with the previous cultural chronology can be seen in Figure 1.

FIGURE 1

Cultural Chronology

Upper Emergent	A.D. 1500--A.D. 1750	Phase 2, Late Horizon
Lower Emergent	A.D. 300--A.D. 1500	Phase 1, Late Horizon
Upper Archaic	2000 B.C.--A.D. 300	Middle Horizon Intermediate cultures
Lower Archaic	6000 B.C.--2000 B.C.	Early Horizon Early San Francisco Bay Early Milling Stone Culture
Paleo-Indian Early Lithic	10,000 B.C.+	

Previous work in the area has consisted of cultural resource surveys and none has produced any temporally diagnostic artifacts. The assessment of the archeological resources found, except the historic resources, is still floating, although it is believed they primarily represent the Upper Emergent, or the archeological manifestations of the ethnographic peoples who inhabited the area at the time of contact.

Establishment of the archeological pattern/patterns which characterize this region has not yet occurred. The archeological investigations at nearby Hidden Dam (Lake Hensley) could form the basis if it were adequately studied. Bennyhoff's (1956) chronology for Yosemite is not considered applicable in this situation where the project area is located on the edge of the foothills and valley floor, since the settlement pattern and site types can be expected to vary.

The most appropriate available study is for Buchanan Reservoir in Madera and Mariposa counties (Moratto 1972), and it still forms the corpus upon which other investigations in the Sierran foothills, which border the San Joaquin Valley, have to compare. The "Madera Phase" of Moratto's scheme is the Upper Emergent culture or pattern of concern here. It has been described many times in the literature, and need not be again.

The Lower Emergent would be represented at Buchanan by the Raymond Phase and the Upper Archaic by the Chowchilla Phase. These two have been well-defined by Moratto and the interested reader is referred to his dissertation. There were no Lower Archaic entities found at Buchanan by his investigations. Later investigations by Peak (1976) recovered temporally diagnostic forms, which indicates occupation occurred during most, if not all, of the Archaic Period. Certainly, Fenenga (1977:35) suggests that occupation at Hidden Dam Project area encompasses the Archaic, although the extent is not clear.

The Paleo-Indian Period does not seem to have been found in the sites of the lower Sierran foothills, but it has been identified at higher elevations, for example at New Melones Lake project

in Calaveras and Tuolumne counties (Crew 1979). The project area may have been occupied during this period, although the evidence will be difficult to find and may necessitate excavation.

The archeological evidence for earlier periods is even more debatable, but Peak (1981) has recently reported on a lithic industry from the lower foothills near Sacramento which typologically, and perhaps geologically, will have to be regarded as Paleo-Indian Period or earlier. Such manifestations were probably not relegated to one region, and such early resources must be searched for during archeological surveys.

Ethnographic Background

The area in the foothills east of the proposed Haystack Reservoir has generally been assigned to the Southern Sierra Miwok (Barrett 1908; Bennyhoff 1977; Kroeber 1925; Levy 1978). Regardless of cultural affinities at time of white contact, the subsistence base and material culture were markedly similar throughout the foothill region. Neighboring Indian groups, within the same physiographic regions although perhaps of different linguistic families, held more traits in common than with linguistically related stock in dissimilar zones (Map 2).

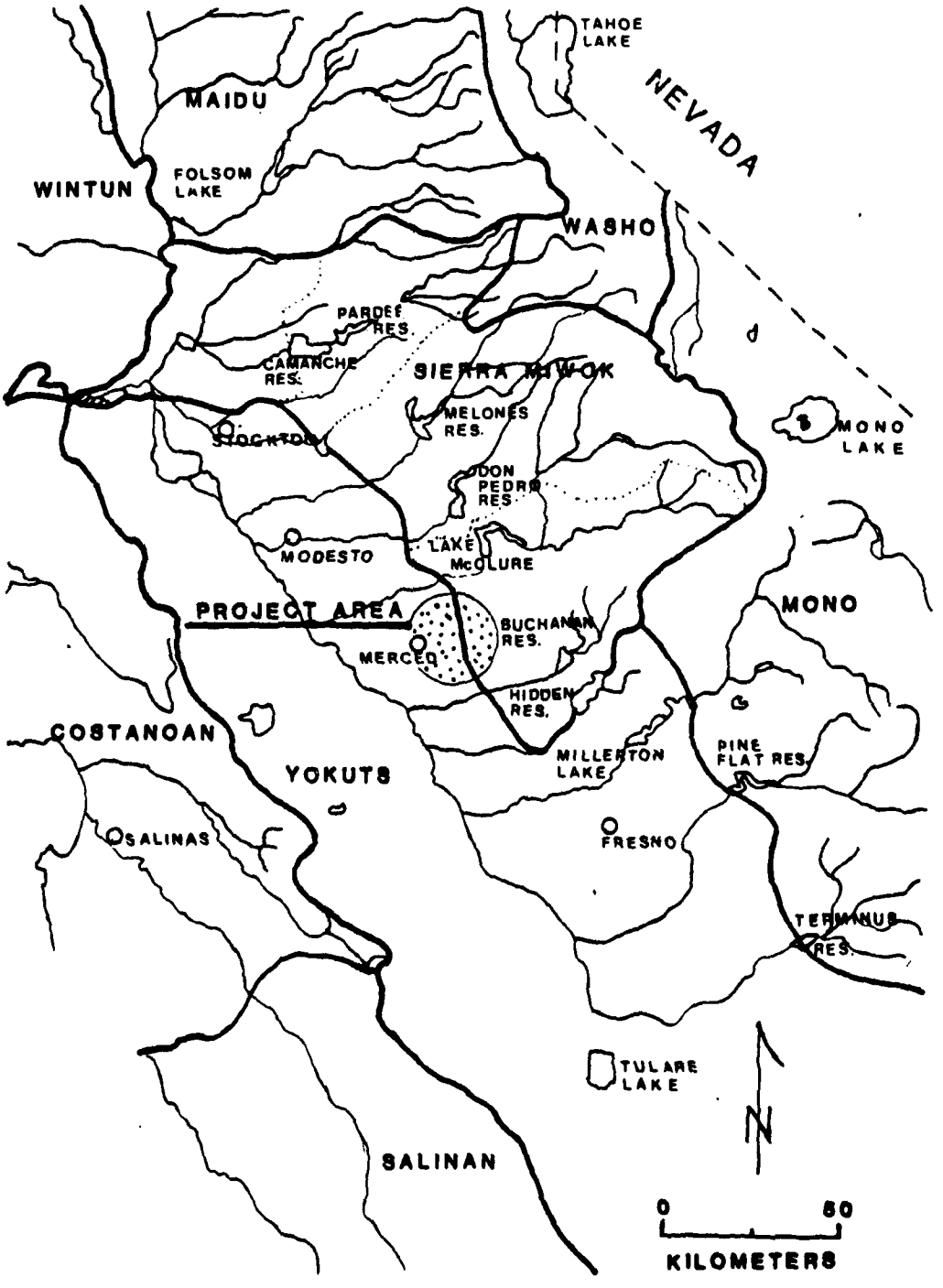
Eastern Miwok territorial boundaries are given as the Cosumnes River to the north, the Fresno River to the south, east to the Sierra Nevada crest, and west to the eastern edge of the Great Valley Plains, with an extension onto the plains north of the Calaveras River (Levy 1978). This area comprised the whole or part of the present political units of Sacramento, Amador, Calaveras, San Joaquin, Stanislaus, Tuolumne, Mariposa, Merced, and Madera counties. The greater part of seven large river drainages is covered by the unit: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, and Fresno.

Three major physiographic units are spanned by the Miwok occupation: the high Sierran ranges on the east, the foothills, and a section of the San Joaquin Valley on the west. Climatic variation is extreme, consistent with the changes in physiographic setting.

The severity of winter in the upper elevations of the Sierra Nevada supposedly precluded permanent villages, with aboriginal use of these high areas restricted to summer and fall. Temporary camps within the mountain ranges permitted seasonal exploitation of the rich resource area, with the population returning to the foothill zone below 4,000 feet, where a more moderate winter climate prevailed (Barrett and Giffort 1933).

Settlement was predicated upon topographic variables, as well as on cultural selectivity. Canyons are often steep, with few flat lands where villages could be located. As a result, most villages were situated on ridges or terraces above the streams. Available fresh water was a limiting factor to location,

DRAINAGES AND ETHNOGRAPHIC TERRITORIES OF THE PROJECT VICINITY



Base map adapted from Moratto 1972, Map II.

MAP 2

although small campsites, established for special purposes, are found with no nearby water source.

Subsistence was based on the acorn and supplemented by gathering of seeds, berries, greens, nuts, and edible roots. Fish, game, and small mammals augmented the diet. Processing of acorns required use of mortar and pestle to reduce the nutmeats to meal. Bread and mush were made from the leached meal.

The archeological manifestations of the Miwok are, without doubt, the Mariposa Phase in the Yosemite Valley (Bennyhoff 1956), the Late Phase in the Sonora region with Desert Side-notched points (Moratto and Riley 1976; Science Applications, Inc. 1979; Peak 1973), and perhaps the Madera Phase, along the Chowchilla River (Moratto 1972), although others would disagree about the latter (Peak 1976).

There is a possibility that the region was occupied by the Northern Valley Yokuts. Clewlow (1976) has recently adequately summed up the meager knowledge known about them, and the reader is referred to this review for further details. Wallace's (1978) excellent summary is the best general recent review. Clewlow does not mention that their villages were situated on high zones or hills above nearby watercourses (Wallace 1978), and such small rises are apparent on the project map for Haystack Reservoir and will have to be thoroughly examined.

Clewlow does note the problem of distinguishing between Yokuts and Miwok archeologically, but Bennyhoff's (1977) Stockton District may be applicable for the Yokuts if some differences between the more northerly placed Yokuts are acknowledged. Perhaps a more appropriate "pattern" would be the Panoche Complex (Pritchard 1966; Olsen and Payen 1968) from the west side of the San Joaquin, except little evidence exists of its hallmark trait, the Panoche point, on the east side of the valley. The Panoche was not reported along the Chowchilla (Moratto 1972), although Peak's (1976) reinvestigation does indicate a few are present at Buchanan. Perhaps the pattern which typifies this portion of the San Joaquin Valley has yet to be determined for the protohistoric or Late Emergent Period. It may, in fact, be represented by the Madera Phase along the Chowchilla, although Moratto (1972) believes the Madera is Miwok.

Linguistic Prehistory

Moratto and Riley (1980) presented a hypothetical model of California linguistic prehistory in their research at Balsam Meadow in the Sierra National Forest. The points of the model which need to be emphasized in this study are: (1) California was inhabited primarily by Hokan speakers between 10,000 and 6000 B.C. The Western Pluvial Lake Tradition (Bedwell 1973) would represent these ancient Hokan populations. (2) Between 2500 and 1000 B.C., there was a movement of Yokutsan groups into the valley and Sierran foothills from the Delta. The Windmiller Pattern and

the Crane Flat in the Sierra are seen by Moratto to represent this expansion. Pacheco A and B (Olsen and Payen 1968), on the west side of the San Joaquin Valley, may represent another part of this expansion. They will also be present in the foothills by 0 A.D./B.C. as far south as the Fresno River. Moratto sees this later movement as the Chowchilla Phase. (3) The Eastern Miwok (Levy 1978), including the Plains Miwok, diverged from the Coastal Miwok around the time of Christ. The Sierra Miwok quickly moved south, displacing the earlier Yokuts groups (Moratto's Madera Phase and perhaps the Late Raymond). In Yosemite, the Mariposa phases represent the Miwok. Yokutsan groups are archeologically manifested by large projectile points and a mano/metate system for milling, while the later complexes are distinguished by light projectile points, use of bow and arrow, bedrock mortars, and cobble pestles. Steatite vessels and clam shell disc beads (Moratto and Riley 1980:26) are also part of this late Miwokian repertoire.

Moratto's correlations between inferred linguistic events and archeologically observed changes are based upon similar age ranges attributed to each entity (Moratto 1981). The danger of attributing an archeologically defined entity to a linguistic entity is well known, and extreme caution and thorough research must both be employed when doing so.

Historic Background

The area of the proposed Haystack Reservoir may have been occupied in the protohistoric period by the Northern Valley Yokuts, although one authority assigns the area to the Southern Miwok. Moraga's expedition is believed by Cook (1960:284) to have passed by Black Rascal Creek in September of 1806, and he and his party did not observe any permanent villages in the region (see Appendix 1). There may have been wet season temporary camps, which were not in use when Moraga traversed the area.

The land is range land and may have been first used as such by Cyrill C. Smith. Smith arrived in California early in 1852, joining his brothers, Pardon and Dorillus, in gold mining at Woods Crossing. Cyrill took time to help with harvesting in June of 1854:

> I have been down twenty miles towards Stockton a haying on dry creek valley. The best wheat and barley grows there I ever saw (;) the hay is mostly wilde (sic) oats from one to two tons per acre. The most splendid Country I ever saw (C. Smith 1854).

This experience may have influenced him away from the mines, for at least as early as 1859 Cyrill, Dorillus, and James (another brother) were raising sheep.

> I am at work for Cyrill & Dorillus attending a band of sheep for them. We live about four miles N.W. from La Grange and Eighteen S.W. from Jamestown . . . there are about seven or eight hundred in this band. They have moved the other band of about eighteen hundred over river about six miles for better food (J. Smith 1859).

By 1872, according to the Merced County Assessment Roll, the Smiths owned 5,000 sheep valued at $7,500 and 11,000 acres of land valued at $13,750. Improvements on the land must have been minimal as they were evaluated at $50.00. This land was northwest of the Haystack Dam area, but by 1881 C. C. Smith owned all of Section 19, the North ½ of 20, and the West ½ of the Northwest ¼ of 29 (Merced County Assessment Roll 1881). His stock had increased to more than 17,000 sheep, and his other taxable possessions indicate that he was very successful.

2 watches	$ 100
furniture	200
sewing machine	25
52 tons grain	780
3 wagons	175
2 harness	25
3 American horses	300
2 colts	50
11 half breed horses	295
3 dozen poultry	10
1 mule	20

By the time of Cyrill Smith's death, he owned 30,000 acres. These were inherited by his son, Elmer D. Smith, including holdings in the Haystack area (Official Map of Merced County 1909).

The first owner of the remainder of Sections 20 and 29 seems to have been C. W. Salter, whose estate is listed in the Merced County Assessment Roll for 1872. Salter owned a total of 13,960 acres, all in Township 6 South, Range 15 East, valued at $17,450.

The next owner of the remainder of Sections 20 and 29 was L. U. Shippee, best known for his harvest machine innovations, particularly the Shippee combine, which won the award at the California State Fair in 1884 and 1885. Unfortunately,

> . . . the use of combines in the state was very limited at that time. While honors were coming to the Shippee plant, they were also annoyed by a series of lawsuits instigated by ranchers for alleged poor performance of the combine (W. Smith 1939:233).

Production of the Shippee combines ceased.

Shippee held the property through 1889 (Merced County Road Plat Book), but no owner is shown for it on the Crocker-Huffman map of 1902. The 1909 Official Map of Merced County shows the owner of the former Shippee property to be Los Animas and San Joaquin Land & Water Company, and the 1919 map indicates that Crocker Huffman Land & Water Company then had acquired it. A bit more than a decade later the Official Map of Merced County (1932) indicates that D. I. Waltz was the owner of the west half of Section 20 and of the entirety of Sections 19 and 30, and that Universal Land Company owned the eastern half of Section 20 and all of 29.

Today the land is owned by the Merced County Board of Education, by John Myers, and by Lloyd's Bank. It is leased by Cook Land and Cattle Company, and it is still used as range land.

Research Design

The conceptual basis for the research design proposed by Peak & Associates for the proposed Haystack Reservoir, Merced County Streams project, is presented below.

Research designs are conventionally regarded as structured on three hierarchical levels. The highest-order level (Level 1) is the theoretical premise or paradigm upon which the research design is based. The most popular paradigm today is cultural materialism, which simply asserts that human behavior, at least in a statistical sense, is based upon economic decision-making. This forms the basis underlying our research design. Use of the concept that people make rational economic decisions supplies a causal factor missing in the use of Systems Theory as the conceptual basis (see Clewlow 1976). Systems Theory is viewed in this regard as a subparadigm which is useful in conceptually structuring the relationships between different components of the entities being studied.

The seond hierarchical level (Level 2) within a research design postulates a set of orderly questions about general human behavior, structured in terms of the assumptions of the first-level paradigms and how those questions can be methodologically addressed. This level identified the kinds of research concerns which can be explored, given the constraints of the project and the nature of the data. Moratto (1981) and Fowler and James (1981) refer to this level as Research Domains.

The lowest level of the research design (Level 3) is the implementation of the design for the particular project, the research strategy. It consists of the specific research questions to be considered and how they will be addressed by the data recovery techniques, including research and interviews, as well as direct field inspection.

The very limited kinds of data available from a cultural resources survey, as opposed to excavation, limits the research

concerns or domains (Level 2) and/or questions (Level 3) which can be confronted. Thus, the major function of a cultural resource survey is to identify the kinds of resources present and how they might potentially contribute to the exploration of higher-order research concerns and/or particular research questions.

The archeological research concerns can be generally divided into four areas: (1) cultural change, (2) subsistence and settlement, (3) cultural and social interactions, and (4) paleo-demography. Numerous research questions can be generated from any of these research concerns. Below are presented a number of examples generally selected to reflect those questions which can profitably be addressed by investigations in this region.

Research Question 1.--If indeed, as Moratto believes, the Yokuts preceded the Miwok in the foothills, then two settlement systems may have been operative. First, if the populations of the valley and foothills were resident in either territory, then the permanent village with its subsidiary hamlets should be archeologically perceivable prior to the Late Period. In other words, sites with earlier components should be in the same locale as the later components, and the respective artifact inventories should appear similar, although varying in particular detail (see Elston et al. 1977 for a similar postulation for the Martis and Kings Beach complexes).

If the settlement systems were different in the earlier period--e.g., if the Yokuts practiced transhumance--then the settlement system in the project area will appear incomplete. Seasonality studies will reveal gaps in the yearly cycle. Certain artifact types may be scarce or absent if the resources associated with their use were distant. A thorough study of the resource potential of the environment would reveal a lack of carrying capacity for a year-round subsistence cycle for a hunting and gathering society.

Research Question 2.--Moratto et al. (1978) have postulated that there was an arid interval between A.D. 700 and A.D. 1200 which severely affected and disrupted the social, economic, and demographic relations and structures at that time. Large nucleated villages of a permanent character were replaced by smaller villages of much less permanence. If so, then sites with Eastgate Expanding Stem and Rose Spring Series points will be absent or scarce and confined to small camps of transitory nature. If not true, then such sites should not reveal any sudden disruption of the settlement system. Although changes may take place, they may be distributed over a longer period than that postulated by Moratto et al. These changes may not be correlated with the proposed arid interval to any significant degree. The finding of temporally diagnostic forms will be important in addressing this research question, as well as observations on site size, artifact density, associated facilities, etc.

The major argument is not whether any arid intervals have

occurred in the last 2,000 years but, rather, to what extent they affected human occupation. If the evidence from the work on the west side of the San Joaquin has any significance, the effects of the postulated arid interval may have had a mosaic rather than a general effect (see Olsen and Payen 1968; Pritchard 1966). Any evidence, pro or con, for the settlement of this part of the valley during that period will be a plus.

Research Question 3.--Ericson (1977) has postulated that the Sierran quarries were not systematically exploited after A.D. 500. These quarries apparently supplied most of the obsidian upon which the bifaces in the Central Valley were created during the period prior to A.D. 500 (Jackson 1974). The quarries were not abandoned, of course, but the extensive quarry operations ceased and local peoples simply picked through the old debris. In the summer, when they moved into the Sierra, they traded it to other peoples in the foothills. Gayton (1948), for example, records that the Mono traded unfinished obsidian blades to the Yokuts.

If Ericson is correct, the sites with artifacts diagnostic of the period prior to A.D. 500 should reveal evidence of biface importation--i.e., either bifaces or large bifacial thinning flakes (BTFs) struck from them. Later occupations will demonstrate much smaller BTFs and, when sourced, they may not be from the Sierran quarries.

Research Question 4.--Clewlow hypothesized that Castle Reservoir and, by extension, Haystack Reservoir have no sites in the areas surveyed because this was a "buffer" or boundary territory between the Yokuts and the Miwok. This hypothesis has a few weaknesses since sites have been found in the reservoir and, moreover, Castle Reservoir is solidly within the territory ascribed to the Yokuts. Further, such buffer zones, while not occupied by villages, are certainly occupied by seasonal and/or activity-specific task groups. Burns or Haystack Reservoir, to judge by the established boundaries, is more likely to be a "buffer zone."

If the Haystack Reservoir area is a boundary territory between two hostile groups, sites will be small and placed inconspicuously to avoid detection (Hickerson 1965). Artifacts indicative of warfare (spear points rather than arrow points?) may be present, and no domestic tools will be apparent (e.g., manos, metates, pestles, bedrock mortars).

If the absence of sites is real, as Clewlow believed, and not a matter of the field techniques needed to discern them (e.g., heavy grass cover overlying sedimentary layers), then the factors which preclude settlement in the area should be recognized. These factors can be many and varied, but include: lack of resources, lack of available water, lack of lithic raw material sources, and lack of suitable combinations of factors for settlements (i.e., two or more of the above are lacking). Even given post-

European disturbances to the environment, these kinds of changes should be evident and some characterization of the pre-contact environment is possible. If, indeed, there are no sites, aridity no doubt played a major role and water resources will have to be carefully examined.

Research Question 5.--As is clear from Clewlow's (1976) brief summation of the Yokuts literature and Wallace's (1978) more comprehensive survey, the settlement system practiced by the Yokuts in the ethnographic past is relatively unknown. The presence of the Miwok to the east would obviously preclude any transhumance into the Sierra except prior to the postulated movement of the Miwok into those areas. The Yokuts on the east side would have to exploit the resources in the Central Valley and the immediate lower slopes. The region was described by the Spanish as extremely rich in game and resources, so a stable subsistence base was eminently practical. We postulate that the Yokut groups maintained permanent villages, organized around a sub-tribe affiliation, which was socio-politically related to other villages within the dialectical tribal territory. Those villages were surrounded by subsidiary hamlets. Wallace (1978) notes the village plan of the Northern Valley Yokuts was not so organized (rigid?) as that of the Yokuts groups to the south. Archeologically, a large site will be surrounded by smaller sites which have a tool industry indicative of a range of tasks--i.e., the hamlets will have an industry similar to that of the villages but in less quantity. Special-purpose sites will have more specialized industry with fewer tool types. The pattern should differ from that of earlier periods.

At Haystack Reservoir, large sites will be located on knolls overlooking a watercourse, sufficiently high so that seasonal flood waters would not submerge them. Smaller hamlets will also be found on knolls, but their remains will be much smaller and the knolls will likely be smaller also. Sites with a specialized artifact assemblage may be found on other topographic features than knolls.

If the area was Miwok, then some evidence of transhumance will be present. If Yokuts, the artifact inventory should conform to Bennyhoff's (1977) Stockton District or to Olsen and Payen's (1968) Panoche Complex. If Miwok, the Madera Phase is probably the most likely archeological manifestation (Moratto 1972). The Mariposa Complex would seem to be primarily indicative of the Yosemite region.

Other research questions based upon research domains such as demography are possible but, given the limitations of a cultural resource survey, they cannot easily be addressed. The list presented is by no means regarded as inclusive, as new insights will undoubtedly generate others, and others will be generated from a closer scrutiny of the one presented.

SURVEY METHODOLOGY

The cultural resource survey of the project areas for the Merced County Streams project was an intensive survey designed to locate all cultural resources, regardless of size or significance. The major purpose of the cultural resource survey is to supply the U.S. Army Corps of Engineers with sufficient information and documentation to permit viable management planning for the resources within the project area.

As part of the background research, pertinent literature was reviewed as well as the reports on previous surveys conducted for the Merced County Streams project (Mohr 1951; Clewlow 1976; Wilson 1978). No site-specific record search was requested for the reservoirs as the records on identified cultural resources, within the project areas, was provided by the U.S. Army Corps of Engineers. Maps and files were examined at the Office of Historic Preservation for information on archeological sites which are in areas adjacent to the study area. A zone from 125 feet to 800 feet in elevation and extending from Owens Reservoir north to the Merced River, was delineated as sites within that belt would be found in a topographically and environmentally similar region to the project area.

As expected, few sites have been recorded within this zone, beyond those identified by Clewlow's 1976 surveys. Joe L. Pope (personal communication 1982) stated that no systematic surveys have been conducted in this region. It is certain that sites of all types occur within this zone but, to date, have not been recognized and recorded.

Excluding all sites which have been identified in the present study area reservoirs and those at Owens, Marguerite, and Mariposa Reservoirs (Clewlow 1976), there are four petroglyph sites within the selected zone of record review. The three other known sites in this zone appear to be habitation sites. Of these sites, CA-Mer-214 is geographically in a similar situation but downstream from Bear Reservoir. The site record form suggests that this site was probably a large village, as over two-hundred bedrock mortar pits and two possible housepit depressions were noted.

The 1976 surveys at Owens, Marguerite, and Mariposa reservoirs were designed to sample the gross pool acreage and were not intensive in nature (Clewlow 1976). Sites recorded at Owens Reservoir include six bedrock mortar loci and one historic foundation. At Marguerite Reservoir, an historic foundation and an isolated metate were the only resources found. At Mariposa Reservoir, there are seven historic and nine prehistoric site, of which one is a midden/bedrock mortar site and eight are bedrock mortar loci. The seven historic remains include mud mortar and slab foundations and chimneys probably related to the early mining era (Clewlow 1976). There is little comparative information since the site record forms do not contain details of construction mode nor any illustrations of the historic features.

It is difficult to determine what prehistoric settlement system is present since the surveys were incomplete. More prehistoric sites may be found in these reservoirs should an intensive survey be conducted, and a system or pattern might be defined.

An examination of the National Register of Historic Places and the monthly supplements revealed that no sites on or found eligible for the Register are located in or within the immediate vicinity of the project area.

The presence of vernal pools in the project area was a complicating factor, since their possible exploitation by the Native Americans is a recently mentioned topic in the literature. Tool kits designed to exploit an ephemeral resource such as vernal pools can be expected to be specialized in character and variable. No depth would be expected at these sites and they should consist of a lithic scatter of both chipped and ground stone artifacts.

Those areas in which vernal pools exist or could have existed in the Haystack Reservoir project area comprise almost all of the area which was surveyed. It would be necessary to employ a sort of "super-intensive" survey to insure that no evidence of ephemeral use of these resource was overlooked. Without previous knowledge that such sites existed in the project area, we did not feel that this level of effort was justifiable. In order to determine the potential data return accruing to this sort of endeavor, an area adjacent to the existing Burns Creek Dam (comprising about 25 percent of the proposed reservoir area) was surveyed by three three-man teams utilizing a crew spacing of three meters. All artifacts perceived were plotted on appropriate scale maps, and any associations between two or more in the same loci around the pools were noted. Other areas with a high density of vernal pools, or an especially large pool, were surveyed with the same care as above. The results were essentially negative, and survey of the proposed Haystack Reservoir proceeded without further testing.

The Haystack Reservoir project area was surveyed by 10- to 15-meter transects, depending on the terrain. When a resource was encountered, the team gathered together and helped in its recordation. Scaled maps were prepared for all sites with a compass and tape. The surface was carefully examined for artifacts and those noted were flagged. All artifacts found were then plotted on the map.

All sites were augered to determine if any subsurface cultural deposits were present. A cultural deposit in this context is defined as an artifact-bearing soil, not necessarily an organic midden. The auger holes were excavated with an auger, if possible, or with a shovel if the soil proved too rocky. The excavated soil was carefully examined for artifacts, but not screened. They were excavated to sterile or as far as the auger or shovel could effectively reach, then backfilled.

The sites were photographed in the environmental setting in black and white. All features and other pertinent artifacts were also photographed. Particular attention was paid to bedrock mortar loci and surface artifacts of a possibly diagnostic character. Color slides were made of particularly important or unusual sites.

The field crew consisted of 11 or 12 professionals organized into three teams of two or three people, each under one crew chief. The field director was in charge of one crew, but also supervised and delegated the daily tasks to the crew chiefs.

The resources were recorded on the approved site survey forms and their locations were plotted on both the appropriate USGS quadrangles and the U.S. Army Corps of Engineers design maps of the proposed reservoir. The isolated artifacts found were plotted by the crew on their field maps. At the end of the day, the crew chief plotted them on his/her map, and these data were then conveyed to the field director. A series of symbols was devised to represent the types of artifacts found as well as their context.

The prehistoric sites were classified according to the presence/absence of the following elements: bedrock mortar loci, midden, petroglyphs, and housepits. The historic elements were buildings, foundations, walls, fences, recent troughs, and mining operations.

In the prehistoric classification, bedrock mortars, midden, or petroglyphs can be a site or an element of a site. Housepits are usually an element associated with middens. A site with three or more elements is a complex site. A prehistoric site with an historic component will usually be regarded as a complex site, but not in all cases--especially if one other element, such as a small, disturbed midden is only weakly represented.

SURVEY RESULTS

The cultural resource survey of the proposed Haystack Reservoir project area recorded four sites. Three are large midden sites with associated bedrock mortars, and one--CA-Mer-228, just outside the project area, near the proposed dike--is a large lithic scatter with midden (see Table 1, Map 3). The augering program demonstrated that all of the midden sites have more than 50 centimeters (cm) of cultural deposit. All sites are flat, and areally extensive, averaging over 80 meters (m) in the longest dimension. CA-Mer-229 is divided by the creek into two loci.

These midden sites have a very dark, almost ashy midden development with a sparse surface lithic scatter. The lithic artifacts noted on all sites consist of a sparse scatter of fire-cracked rock, comparatively few silicate or obsidian flakes,

and no projectile points. The lack of projectile points is further substantiated by the lack of bifacial reduction debitage, although the ground surface was purposely searched for it. Two of the sites, CA-Mer-233 and CA-Mer-229, have bowl mortars or fragments associated. Ground stone consists of manos or cobble pestles or fragments therefrom. Large cobble flakes with roughly worked bifacial or unifacial edges were also found on most sites.

The three sites within the proposed reservoir are located adjacent to Black Rascal Creek and a winter and/or spring occupation is suggested.

The site just outside the project area, CA-Mer-228, is associated with the large vernal pool. This association is fortuitous, since an adjacent spring was probably a more influential for the site's location. Both the spring and vernal pool were dry in the summer; thus, occupation likely occurred in the winter and spring.

None of the sites have undergone any noticeable disturbance except that caused by grazing. Black Rascal Creek was not mined, since it does not flow through gold-bearing deposits. Lateral erosion due to seasonal creek flow is a constant disturbance, although the grass cover may impede erosion.

In summary, the sites are all environmentally associated with seasonally active water sources. The presence of midden suggests an intensive seasonal occupation, although the lack of projectile points and bifacial reduction debitage indicates little lithic point manufacture and/or maintenance was practiced. Still, the production and use of perishable materials to create projectile points cannot be rejected. The use of both bedrock mortars and bowl mortars is evidenced since both cobble and shaped pestles are present. The sites have a dispersed scatter of artifacts with midden depths ranging from 50cm to 1 meter.

TABLE 1

List of Resources

Site	Size M^2	Type	Prehistoric Features BRM	Prehistoric Features Midden	Location	Elevation
CA-Mer-233	16,800	M	X	X	Reservoir	315 feet
CA-Mer-228	6,075	M		X	Reservoir	315 feet
CA-Mer-229	23,437	M	X	X	Reservoir	300 feet
CA-Mer-234	1,968	M		X	Reservoir	280 feet

There has been some discussion in archeological circles in recent years about the possibility of vernal pool exploitation during the winter by Native American groups. Despite our intensive examination, no association between a definitely

utilized artifact and a vernal pool was found, except near an established site.

There is very large vernal pool between the proposed Burns and Haystack reservoirs which is shown on the USGS Haystack Mountain 7.5' quadrangle. It is sufficiently far from the established sites, that any artifacts found around it may belong to a tool kit exploiting it. The results, however, were negative. The large cobbles of the North Merced Gravel pediment are plentiful in vernal pools, and some appear battered. In the context of their depositional history (quick flowing stream-laid deposits), some battering should occasion no surprise.

CONCLUSIONS

As discussed in the research design, the limitations of a cultural resource survey preclude addressing many research questions, particularly those not concerned with cultural chronology or settlement systems and subsistence. Even the above research concerns (or domains) can often be addressed only in the most superficial fashion because only surface features and artifacts can be used as evidence. The lack of independent testing to confirm a hypothesis is, of course, the major scientific step missing in the procedure.

In the cultural chronological domain, little can definitely be said because no temporally diagnostic artifacts were found on any of the sites. It is believed that they represent predominantly Upper Emergent Period sites for the most part since the artifacts found, such as bowl mortars and bedrock mortars, are part of the material culture of some of the known late inhabitants of the region--e.g., the Yokuts and the Miwok. The bedrock mortars are formed in relatively soft mudstone, and it does seem unlikely that they could be earlier the Upper Emergent and Historic Period. Further, an examination of a burial exposed on the surface of CA-Mer-228 produced a steatite bead, which is customarily considered as a late trait. Although earlier occupations cannot be rejected out of hand, surface evidence indicate only Upper Emergent occupations. The lack of temporally diagnostic artifacts can be due to local "pot hunting," but that is not believed to be a major factor here. The project area has been held by large ranches for over 50 years, thus access would be limited. There were certainly no large "collectable" artifacts, such as bowl mortars, observed near the local ranch houses. It is difficult to see artifacts on grass covered terrain; thus, local collecting has probably always been minimal.

The aridity of the area during the summer with drying up of the creeks suggests that the sites are winter/spring occupations. CA-Mer-228, for example, is situated on the edge of a large vernal pool which even today dries up in the summer. It is associated with a spring, and the occupation was probably more influenced by the spring than the vernal pool. The spring

was dry when the survey was conducted, and if conditions have not altered drastically, it probably seasonally dried up in the past summers. Thus, occupation would have occurred around it only in the winter/spring unless water was carried for some distance. One could argue that the climate has changed or that the extensive mining upstream has changed the flow of the creek, but there is no evidence that Black Rascal Creek was ever seriously mined. Its headwater begins in formations such as the Valley Springs, which are not gold-bearing deposits. It is doubtful it was ever mined. The General Land Office surveyors who mapped the region in 1854 did not record any mining or ranching operations in the area.

No evidence of structures or other such living or social facilities was observed on any of the sites. Whether this lack is due to use of non-subterranean structures or to post-occupation disturbance (natural/man-caused) remains a question to be examined. The auger holes in these sites did not produce any evidence suggesting impacted clay floors. Given the limitation of augering, this is not definitive evidence against their presence. Larger scale block excavations are often required to see such features. The sum of the evidence suggests lightly constructed houses or shelter but, again, this is a hypothesis which needs to be tested.

The burial which is reported to be eroding from the surface of CA-Mer-228 suggests that burials may well be present in all of the sites in the project area. Demographic research questions are, thus, potentially addressable, with Native American consultation. We believe the potential occurrence of burials at the sites should proscribe the use of mechanical equipment for any archeological investigations unless used with extraordinary care.

The intensive examination of the surface of each site, including a $10m^2$ examination and count of debitage, produced only a few informal cores and a few non-diagnostic chert flakes. The lack of any bifacial reduction debitage would be surprising in sites higher in the foothills, but it may be characteristic of these lower foothill and valley sites. Their absence suggests relatively little biface or projectile point maintenance or production. Any comprehensive investigative program will have to address this apparent lack, since it has relevance to the material concerned with subsistence.

The sites found appear to be temporary base camps established in the winter and spring. The lack of hard bedrock exposures in the project area forced the use of mudstone. There are considerably less bedrock mortars also, which may indicate bowl mortars would be more commonly used.

Whether groups seasonally moved into this edge of the valley floor, from the main rivers or down from the foothills, cannot be established at this time. In the Upper Emergent Period, the inhabitants of the foothills were the Central Sierran Miwok, while the valley floor occupied the Yokuts. The artifactual

evidence found is not sufficient to judge whether the occupants were either.

IMPACTS

Introduction

Borrow areas.--The other major impact to resources in the proposed reservoir area will be due to construction of the dam itself. The construction involves the activities associated with preparing access roads, the base of the dam, and the spillway. These features of the dam construction are comparatively limited in areal extent and, except for sites which might be located where they plan to build a structure, the effects will be minimal. Dams, however, are large, complex structures and Haystack is to be an earth-filled dam. The borrow areas from which the construction material is to be drawn are within the confines of the proposed reservoir. The raw material to build the dam will be derived by bulldozing or stripping off desirable raw materials over a comparatively large areal extent. In the Haystack Reservoir, the Merced gravels are one of the more desirable raw materials and stripping the terrain upstream from the dam site will encompass a moderately large area. The effect on sites within the borrow areas will be one of total destruction (see Map 4).

The destruction of the sites within the borrow areas can be avoided if a strip surrounding them is left undisturbed. This buffer should be sufficiently wide that the soil stabilizing procedures planned (contouring, covering with top soil, and seeding) can be accomplished without impacting the site (see U.S. Army Corps of Engineers 1981:89) for information on soil stabilization). The construction equipment should not cross the sites while conducting the stabilizing procedures.

Inundation.--The damages to cultural resources due to fresh water flooding have been of concern for a long time but became a major topic in the 1970s. In particular, the National Park Service has undertaken research on this topic under the Reservoir Inundation Studies project (Carrell et al. 1976; Lenihan et al. 1977) and other projects have been conducted within the same guidelines (Padgett 1978).

The major impacts can be divided into chemical and mechanical effects. The chemical impacts on the soil constituents and the various artifactual categories, facilities, and ecofacts are primarily due to immersion and its consequences. The short-term episodic flooding in the proposed Haystack Reservoir will likely lessen the direct impacts of this effect more than the damage caused by the mechanical factors.

The mechanical effects are primarily due to the wave action zone, which erodes the soil in the process of cutting benches.

Other mechanical impacts of less importance in the project area are "freeze-thaw, liquefaction, desiccation and alternating with inundation, and siltation" (Carrel et al. 1976:19). Again, the short periods of inundation would preclude much damage due to these other factors, except perhaps for the effects of the alteration of wetting and drying due to inundation. Moreover, the effects of these other factors are less well known than the impacts of wave action, since the results are not so observable, particularly in ungated dams of the sort used only for flood control.

Impacts

Borrow areas.--The borrow area for the proposed Haystack Reservoir encompasses a large portion of the flats upstream from the proposed dam site. The scouring will include materials of the Valley Springs and Mehrten formations, as well as the upper alluvium which is mixed with the Merced gravels (U.S. Army Corps of Engineers 1981). It reaches well up the tributary drainage to the east and encompasses most of the major bends of Black Rascal Creek before it enters the narrow upper part of the project area to the northeast (see Map 4).

CA-Mer-233 and -234, large middens without associated bedrock mortars, are located in the borrow area. The direct impacts to these resources will be total if the proposed borrow area is maintained. The sites are located adjacent to Black Rascal Creek. Moreover, the creekbed in the vicinity is formed of bedrock and thus the erosion of its banks has proceeded laterally at a higher rate than other streams in the vicinity.

Inundation.--The estimation of the level of impacts is a fraught-filled endeavor because there have not been any studies undertaken on the impacts to be expected from periodic inundation of resources. It is known from records maintained on the present Burns and Bear dams that some water has often been presend behind these dams during the winter months for most years. The impacts to be expected will depend upon how often and how long the resources will face wave action and inundation. On a rational basis, sites located at the lower elevations will face relatively more impacts, since the rainfall needed to raise the water level high enough to impact the lower elevation sites, is less than needed to impact the higher elevation resources.

To provide a relative measure of projected impacts, the U.S. Army Corps of Engineers has provided a table of probability estimates for four arbitrary zones of 10 feet each. These are simply probablistic statements based upon the changes of water level rising to any one zone during any one year. The second column demonstrates the highest and the lowest probabilities that the water will rise to levels within the zone. The first column displays the approximate number of days the water will be within the zone for the corresponding probability.

FIGURE 2

Probability and Duration of Inundation

Zone (elevation in feet)	Probability (percent)	Duration (days)
260-270		
H	90	1
L	10	30
270-280		
H	30	1
L	4	30
280-290		
H	15	1
L	1	30
290-300		
H	2	1
L	0.1	.5

(The probability and duration are based upon an average for the zone).

The table demonstrates the obvious: resources located in the lowest zone stand a higher probability of being inundated than resources located near the gross pool elevation. As the three resources within the reservoir area are located in the last two zones or above, the expected level of impacts will be small as will the chance of the impacts occurring. However, sites are all located along the bank of Black Rascal Creek and its channel will fill up first; thus, the cultural deposits facing the stream will occasionally face direct impacts due to wave action erosion and inundation. In addition, the effects of the undercutting of the cultural deposits will be commensurately higher. The level of impacts to all of the resources is similar under these conditions, so each will be treated as if it faces the same degree of impact.

The angle of the water and the terrain will be acute, given the flatness of the terrain. The impact to the sites due to wave action will be comparatively less than in steeper terrain, because wave action will not easily cut benches at this angle of contact. Moreover, the periodicity of the inundation indicates there will be only a minimal chance that the water level will stand at any one level sufficiently long to cause significant erosion of the sites' surfaces.

The midden soil in all three sites is a moderately compact sandy, silty loam which is very susceptible to erosion. The present creek height, except during flood conditions, appears to be below the cultural deposits. Except for sheet wash, erosion is now probably minimal.

The lithic scatter on CA-Mer-229 will be only minimally affected by erosion due to wave action on the surface or bankward edge because it rests upon more resistant soils than do the cultural deposits. The most likely impact the site will undergo is disturbance of the distribution of artifacts on its surface due to wave action. The infrequent filling of the reservoir will occasionally increase the chance for artifact movement due to wave action. The soil is protected by the acute angle at which the water surface meets the site surface, as well as by the grass cover. The artifacts will not be so protected. Even light and periodic wave action will undermine the soil they rest upon and cause them to move. Over a period of years, such movement will destroy all meaningful cultural patterning.

In addition, the vertical face some artifacts offer to the encroaching waves, will lead to their being moved as the waves roll into them. Larger artifacts, such as manos, choppers, and cores will be most easily moved by the direct impact of the waves.

CA-Mer-228, which lies outside the project area, is situated downslope from the elongate east-to-west trending ridge which forms the eastern abutment of the dam. One of the proposed haul and (later) access roads runs along its upper surface.

As long as the construction crews confine road travel to the existing roads, the only impact to the site foreseen might result from some deposition of debris on the site's northern boundary as a result of the improvement of the existing road. Some movement downslope by the road construction debris is probably inevitable, but the impact will consist only of a light surface scatter of debris. The layout of the construction yard operations is not known at this time, so this possible impact (using the area as a yard, for example) cannot be evaluated.

EVALUATION OF ELIGIBILITY TO THE NATIONAL REGISTER

The criteria for evaluating potential entries to the National Register depend upon the assessment of their "quality of signficance" (National Park Service 1977). These potential entries must possess an "integrity of location, design, setting, materials, workmanship, feeling and association." In addition, these potential entries must satisfy one or more of the following criteria:

1. They are associated with events that have made a significant contribution to the broad pattern of our history.

2. They are "associated with the lives of significant persons in our past."

3. They "embody the distinctive characteristics of a type, period, or method of construction, or that represent the

work of a master, or that represent a significant and distinguishable entity, whose components may lack individual distinction."

4. They "have yielded or may be likely to yield, information important in prehistory or history."

Assessment of the significance of these sites will be based upon the above criteria. As the majority are prehistoric resources, the last criterion (4) will form the primary basis for the judgment.

The significance of a resource, especially in the context of the informational limits of a cultural resource survey (in contradistinction to archeological excavation and analysis), is based upon the potential of a resource to address the pertinent research questions for a locale as well as those of general anthropological or historical interest. The research design presented by Peak & Associates and the results of the further investigations by the ethnohistorian will form the basis for evaluating the significance of the resources.

It must be borne in mind that particular prehistoric and historic research in the project area and in the immediate environs has been minimal. The principal work was by Ancient Enterprises (Clewlow 1976). They surveyed seven existing or proposed flood water reservoirs, four of which were resurveyed during the performance of this contract.

The three midden sites within the reservoir area (CA-Mer-233, -229, and -234) are all large in extent, with bedrock mortars and artifacts associated. The augering program has revealed that they have midden depth or cultural deposit in excess of 50cm--in the case of CA-Mer-223, at least 90cm. The surficial examination of each site produced a generally similar artifact inventory of chert or basalt flakes, a few unifacially worked core tools, a core, and a few fragments of bowl mortars. Two sites are associated with the bedrock mortar loci in the soft mudstone which forms the bottom of Black Rascal Creek.

The preservation of ecofactual data, such as faunal and macrobotanical remains, could not be positively ascertained by the auger testing. However, CA-Mer-228 did reveal portions of a human burial on the surface, which suggests the preservation of faunal remains at least is a distinct possibility.

All three of the sites offer the potential to address the four major research concerns presented in the proposal. The survey did not produce any temporally significant artifact or any evidence of radiometric datable material, but, with intensive excavation and screening, the research questions concerned with cultural change can likely be addressed (see Research Question 1). The intensive surveys of all four reservoirs undertaken by Peak & Associates, and the positive results from all four, indicate that research questions concerned with subsistence and settlement are

eminently feasible (see Research Questions 4 and 5).

The summer aridity and intermittent nature of the flow of Black Rascal Creek, indicates a winter/spring seasonal occupation as discussed in Conclusions. The sites are probably associated with the occupations along Burns Creek and should be considered as part of the same settlement pattern. Given the relative depositional integrity and preservation of the sites, they have the potential to help determine: (1) whether the inhabitants were Miwok or Yokuts (see Conclusions), (2) whether the occupation occurred only in winter/spring, and (3) whether they are large or small villages allied to those along Burns Creek.

Research questions concerning cultural and social interactions may be addressed by an intensive examination and comparative study of collections derived from an adequate archeological investigative program. For example, the probability of localized areas for certain activities can be tested with an adequate areal sampling design. The presence of an exchange system is also probable since one site (CA-Mer-233) produced an obsidian flake, an imported item. Research questions concerned with paleodemography usually require burials and associated grave goods. No burials were observed in the sites within the reservoir, but evidence of a burial was found at CA-Mer-228, the site below the proposed dam. Burials may be present at the other sites as well.

All three sites within the reservoir possess an integrity of their midden, are generally similar in their setting, and the artifacts found display the same level of workmanship. They, no doubt, form part of the same settlement system with the prehistoric sites in the nearby proposed Burns Reservoir. Of the four criteria for nomination to the National Register, the potential to yield information important in prehistory is the only applicable criterion. Ethnographically, little is known about the inhabitants of this area, since their societies and lifeways were totally destroyed by the time serious ethnographic work was begun in the late nineteenth century. For example, whether the inhabitants are Miwok or Yokuts is not definitely known and evidence for the region is poorly known archeologically. Therefore, all three of the middens are likely to yield information important to the prehistory of the region, since so little is known and their comparatively pristine context suggests that many important research concerns can be addressed with proper archeological investigative methods (Table 2).

MITIGATION/PRESERVATION ALTERNATIVES

The projected impacts to the resources in the proposed gross pool of Haystack Reservoir are based upon the belief they will equally all stand a chance of being impacted occasionally by water action and inundation. However, the flatness of the terrain will

TABLE 2

Recommendations For Nomination

Site CA-Mer-	Type	Condition	Research Potential	No Further Research	Research Recommended	Recommended for National Register
228	Midden	Good	High	X		Yes
229	Midden	Good	High		X (Alt. 2)	Yes
233	Midden	Good	High		X (Alt. 2)	Yes
234	Midden	Good	High		X (Alt. 2)	Yes

minimize any wave action erosion except along the streamside of the deposits.

If the borrow area presented in the U.S. Army Corps of Engineers' report (1981) is used, sites CA-Mer-233 and -234 will be destroyed.

Where a data recovery program is proposed for the prehistoric resources, we suggest a two-phase effort. The first phase will be a limited testing program to determine what subsurface evidence is present (artifacts, features, faunal and macrobotanical remains, radiometric data material). The purpose of the Phase I effort is to provide sufficient information so a realistic data recovery program can be formulated for a Phase 2 mitigative effort. The sample size needed to achieve this goal is another problem.

The number of units needed to provide a sample adequate to demonstrate the artifact density(s), features, spatial activity areas, and depositional complexity for a limited testing effort has not been the object of much sampling theory. Sampling theory has generally focussed upon problems of regional sampling strategy and sizes needed to adequately demonstrate the variability of the populations tested. Such studies do not usually provide guidelines to indicate what sample size(s) is required to sufficiently reveal the internal complexity and artifactual variability and density of a site.

Ammerman et al. (1978) have recently presented a provocative study which can be used to indicate a probable range of effort for the limited testing of a site. Their report was a computer simulation study which tested the efficacy of different sampling strategies (random and non-random) and different sample sizes. Their known population was an abandoned Masai kraal which had been carefully mapped, and all artifacts plotted by provenience. Their results were varied, but two are of import here.

First, sample units should be small for any given sample size--i.e., it is better to use many small units than a few large ones. Second, an effective sample size ranged from three to fifteen percent. Above fifteen percent, you have to drastically increase the size to produce significantly more predictability. Below three percent, it is difficult to predict within an acceptable level of tolerance, the variability and complexity of the sites. We are discussing here, the data recovery required to fully reflect the variability of a resource.

For a limited testing of a site, we propose a fixed .01 percent sample site, or an approximation. If a sample size as low as three percent can achieve an acceptable level of predictability, then a .01 percent sample size should be sufficient to provide a basis to judge what sample size will be needed. Rondeau (1982:1) used a .06 percent test sample by area on CA-Nev-119. His Phase 2 effort considerably underestimated the

artifact density and complexity found, a result of placing those units only on one part of the site. He could have gotten by with less if they had placed across the site. An even distribution of small units across the site or that part of the site to be impacted is the solution (see Table 3).

CA-Mer-233

Alternative 1.--The borrow area should be changed to avoid impact to the site. A very large corridor of at least 50 meters could be left around the site boundaries. The stabilizing procedures planned by the U.S. Army Corps of Engineers for the borrow pits should keep the lateral erosion of the corridor to a minimum. Again, the emphasis is preservation.

Alternative 2.--If establishment of a corridor around CA-Mer-233 is not possible and the site must be destroyed, a Phase 1 limited testing program is suggested. CA-Mer-233 is a large site of, conservatively, 16,800m^2. Since complete destruction is projected for this alternative, relatively large test samples will be needed to assess the potential of the site to address the pertinent research concerns. There are no accepted criteria by which this can be established that will satisfy all interested parties, but a .01 percent sample by area, or 17m^2, should be large enough to assess the site's potential. These units will be one by one meter in size and distributed over all parts of the site.

CA-Mer-234

This site lies just within the proposed borrow area.

Alternative 1.--Again, preservation is the best alternative. Since the site lies at the border of the proposed borrow area, it should be relatively easy to avoid it. Even ignoring the advantage of preservation, the high cost of mitigation measures certainly supports this alternative. A corridor of 50 meters is suggested to insure the stabilizing procedures do not impact the site.

Alternative 2.--If preservation is not feasible, the limited testing program should be similar to that recommended for CA-Mer-233. The approximate size of the site is 1,968m^2; as with CA-Mer-233, we recommend a .01 percent sample by area, or 3m^2. The sample size was increased by one meter to insure the placement of one unit in the center and two on the peripheries.

TABLE 3

M = Midden

Mitigation Recommendations

Elevation	Site	Type	Area M^2	Borrow Impacts Alt. 1	Borrow Impacts Alt. 2	Inundation Impacts Alt. 1	Inundation Impacts Alt.2	Comments
315 feet	CA-Mer-228	M	6,075	None	None	None	None	Outside project area
300 feet	CA-Mer-229	M	23,437	None	None	None	Testing $23m^2$	
315 feet	CA-Mer-233	M	16,800	None	Testing $17m^2$	None	Testing $17m^3$	
280 feet	CA-Mer-234	M	1,968	None	Testing $2m^2$	None	Testing $3m^3$	

Mitigation of Inundation Impacts

As mentioned earlier, all sites within the projected gross pool will face some inundation impacts. All three are relatively flat and are located in the same physical setting next to Black Rascal Creek. The lateral margins facing the creek of each site will bear the brunt of possible wave action erosion. Their upper surfaces are covered with grass and this should provide protection to the sites during the relatively short time they will be immersed.

Alternative 1.--Preservation is the best mitigation and the best way to achieve this goal is not to impact the site by the creation of the reservoir. The feasibility of this alternative will have to be decided in respect to many other factors, but this does remain the best way to mitigate disturbance to a resource.

Alternative 2.--A .01 percent sample by area is recommended for each site. The majority of the units should be placed near the creek edge of the site to insure that the portions of the site to be impacted are sampled and studied. In the case of CA-Mer-229, both loci should be sampled, but the majority of the units should be in Locus A. The units allocated to each of the sites are as follows: CA-Mer-233, 17; CA-Mer-234, 3; and CA-Mer-229, 23.

PRIORITY OF MITIGATIVE/PROTECTIVE MEASURES

The sites are ranked by borrow area impacts and inundation. The highest priority is, of course, the site to be impacted by the scouring of the upper ground level in the borrow area. Sites CA-Mer-233 and -234, in the borrow area, have the highest priority as their destruction will begin during the construction phase of the project (Table 4).

Impacts due to inundation are of less priority since they will commence later in time and have a lesser effect. If the borrow areas are modified to exclude CA-Mer-233 and -234, then the impacts to all three sites within the project area will be the same.

SCHEDULE FOR LIMITED TESTING

The schedule for the limited testing of the resources in Haystack Reservoir is proposed below. The second phase effort will depend on the results of the limited testing. The proposed first phase effort has ignored the adverse effects which would occur if the sites were within a borrow area, as it is reasonably clear the sites can be avoided.

TABLE 4

Need for Mitigative Measures

Site	Best Alternative Preservation	Least Critical	Moderately Critical	Most Critical	Comments
CA-Mer-233	X			X	If impacted by borrow area
CA-Mer-234	X			X	If impacted by borrow area
CA-Mer-229	X	X			Inundation impacts only

The total sample is $43m^2$ with a projected depth of one meter for a total of $43m^3$. An excavation rate of $.30m^3$ per person, per day is a realistic estimate. Mapping and surface collecting are separate estimates. The rate includes sufficient time for screening. A field season of three weeks with a crew of eleven is projected.

TABLE 5

Schedule of Field Days at each Site

Site	Volume m^3	Excavation (hrs)	Mapping (hrs)
CA-Mer-299	23	613	8
CA-Mer-233	17	453	8
CA-Mer-234	2	80	8
	42	1,146	24
TOTAL MAN/HOURS			1,170

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GLOSSARY

ADAPTATION: Cultural developments by which a society relates successfully to its effective environment.

ALLUVIUM: Unsorted sediments (mixed silt, sand, gravel, cobbles, etc.) deposited by a stream.

ARTIFACT: Any product of human cultural activity (such as tools, weapons, works of art, etc.).

ARCHEOLOGY: The branch of anthropology devoted to the scientific study of past cultures through their material remains. Archeology seeks to describe and explain the nature and evolution of cultural systems.

BASALT: A dense, fine-grained, tough extrusive igneous rock; a common material in California lava flows. Indians chipped basalt into knives, points, scrapers, and other artifacts.

BEDROCK MILLING STATION: An outcrop of bedrock with one or more mortar cups, milling slicks ("bedrock metates"), gyratory mills, or other features related to food grinding or crushing.

BIFACE: Any stone artifact chipped on both sides or faces; most projectile points, knives, drills, etc., are bifaces.

BIFACE THINNING FLAKE: The convex-shaped flakes removed off a biface during manufacture or maintenance.

B.P.: Before Present; by convention, before A.D. 1950; often used in citing radiocarbon dates.

BLADE: A flake twice as long as it is wide, usually struck from a specially prepared core.

CARBON-14 (RADIOCARBON) DATING: A method for determining the age of organic material by measuring the extent to which the isotope carbon-14 (^{14}C) has decayed into stable nitrogen 14 (^{14}N), comparing the ^{14}c fraction with its known half-life of 5,568 ± 30 years.

CENTRAL SIERRA PETROGLYPH STYLE AREA: The central portion of the Sierra Nevada mountain range and adjacent foothills which includes all or part of Amador, Butte, Calaveras, El Dorado, Madera, Mariposa, Merced, Nevada, Placer, Plumas, Sacramento, Sierra, and Stanislaus counties.

CHERT: A flint-like rock composed of chalcedony with variable amounts of clay and other impurities.

CHOPPER: A large, usually crude, pebble, cobble, or core tool--typically percussion-flaked to form an axe-like cutting edge along part of the margin--used for various heavy chopping and cleaving work.

CIRCLE AND DOT: Petroglyph with elements of one, two or several concentric circles with a dot or sphere inside.

COBBLE PESTLE: A minimally shaped, naturally elongate, cobble intended for use in a bedrock mortar.

COMPLEX: A patterned grouping of similar artifact assemblages from two or more sites, presumed to represent an archaeological culture.

COMPONENT: A site or a stratum within a site which represents the activities of one cultural group during a relatively brief interval of time. Similr components within a locality or region comprise a phase.

CORES: The lithic cobble, nodule, or prepared artifact from which flakes or blades are struck.

CULTURE: The non-biological and socially transmitted system of concepts, institutions, behavior, and materials by which a system adapts to its natural and human environments.

CULTURE HISTORY: The archaeological sequence of cultural activity through time, either within a defined geographic space or with reference to a particular group of people.

CUPULE: A small, round pecked petroglyph.

CURVILINEAR: Free-form or geometric motifs consisting of wavy or non-linear elements joined by curves.

DEBITAGE: Lithic refuse or debris produced by flaked stone tool manufacture. An analysis of debitage can yield much information about technology, skills, and economic variables.

DEMOGRAPHY: The study of human populations with special reference to their size, density, composition, and distribution.

ECOFACTS: The faunal and botanical material carried into a site by the agency of man.

ETHNOGRAPHY: The direct anthropological study of living human groups or the indirect study of groups through interviews and archival research.

FACILITY: A large, complex artifact or part of a cultural site (e.g., a hearth, cairn, house remains, rock alignment).

EXCHANGE SYSTEMS: The trading networks through which goods are moved from one consumer group to another.

FIRE-CRACKED ROCK: Clastic rock fragments broken by heat from fires in the past.

FLAKES: The lithic artifact struck from a core.

FLAKE-SCRAPER: A small flake of stone used as a scraping tool; flakes may be retouched or used without such modification.

GRINDING SLICK: A smooth flat surface on a boulder or bedrock which has been used in conjunction with a mano to crush seeds and nuts.

HAMMERSTONE: A hard, tough, fist-sized rock used as a hammer to work stone, drive wedges, splinter bones, etc.

HEARTH: A feature consisting of ash, charcoal, burned rock, charred faunal remains, oxidized earth, and/or other evidence of fire kindled by humans.

HOUSEPIT: A depression of any shape representing the former location of a partly subsurface structure.

IN SITU: In place; a term applied to archaeological phenomena which are found in their original, undisturbed position or location.

LANGUAGE FAMILY: A group of two or more languages that developed from a single ancestral language; the latter is referred to as the proto-language for that family.

LITHIC SCATTER: An archaeological site consisting of chipped and, less often, ground stone artifacts and refuse distributed on or near the surface.

MANO: From the Spanish la mano ("hand")--a loaf-shaped handstone used for grinding seeds, pigments, etc., on a metate or milling-stone.

METATE: From the Aztec metatl, a stone slab upon which corn and other grains are milled with the aid of a mano, which is used in a push-pull motion.

MIDDEN: A deposit, marking a former habitation which contains such materials as discarded artifacts, bone and shell food refuse, charcoal, ash, rock, human remains, and structural remnants.

MITIGATION: Minimization; in colloquial jargon, the reduction of adverse effects to cultural resource by avoidance, data collection, or other means to preserve potential data.

MORTAR: A strong bowl-like vessel or receptacle in which substances are crushed or pounded with a pestle.

BEDROCK MORTAR: A mortar "cup" or pit in a bedrock outcrop.

BOWL MORTAR: A shaped stone bowl in which foods were processed.

COBBLE MORTAR: An unmodified cobble in which a mortar pit has been ground.

OBSIDIAN: Natural volcanic glass. This was the most prized material for chipped stone artifacts in California.

OBSIDIAN HYDRATION DATING: A method for determining the age of obsidian artifacts by measuring the thickness of a specimen's hydration "rim" (layer of water penetration) and comparing the rim depth with a rate for the particular climate/geographic area and type of obsidian being studied.

PALYNOLOGY: The study of fossil pollen for the purpose of reconstructing former vegetation assemblages and climatic conditions.

PESTLE: An elongate, often cylindrical, stone or wooden artifact used to pulverize food products and other stuff in a mortar.

PETROGLYPH: A design or motif pecked, scratched, or incised into the surface of a rock; unpainted "rock art."

PICTOGRAPH: A design or motif painted onto a rock surface; painted "rock art."

PHASE: A distinctive archaeological unit representing a fairly brief interval of time within a locality or region. A phase may be a single component at one site or a prolonged occupation of numerous related sites (Willey and Phillips 1958).

PREHISTORY: The archaeological record of non-literate cultures; the cultural past before the advent of written records.

PRESSURE FLAKING: The manufacutre of stone artifacts through remving flakes by pressure applied with a bone, antler, or metal knapping tool.

PROBLEM DOAMIN OR CONCERN: A group of related questions or topics to be investigated, along with a discussion of possible ways to study them.

PROJECTILE POINT: A sharp stone or bone tip or point affixed to the distal end of a spear, lance, dart, or arrow.

RECTILINEAR: Angular elements of geometric or sub-geometric designs which consist of linear segments joined at angles.

RESEARCH DESIGN: An explicit, formal articulation of research objectives with a systematic plan for the recovery and analysis of data to achieve those objectives.

RESEARCH QUESTION: Particular hypothesis formulated to assess particular problems.

RESEARCH STRATEGY: The system of concepts by which a theoretical stance is related to a particular research design.

ROCK ART: Designs or motifs of art which are produced on natural rock surfaces. Includes petroglyphs and pictographs.

SAMPLE: Part of a whole; a collection of data taken from and representing a "statistical universe" (a larger body of potential data).

SAMPLING PLAN: The explicit procedures by which data are to be collected.

SCARP: A line of cliffs produced by erosion or faulting, such as the precipitously steep eastern wall of the Sierra Nevada.

SCRAPER: Any of the myriad tool forms used chiefly for such scraping functions as stripping bark, planing wood, removing scarf skin from hides, etc.

STERILE: Devoid of archaeological material.

STRATIGRAPHY: The study of cultural and natural strata or layers in archaeological and geological deposits.

TRATITION: A way of life or a consistent patterning of technology, subsistence practices, and ecological adaptation which persists through a relatively long interval of time (Willey and Phillips 1958).

TRAIT: Any definable element or aspect of culture suitable for comparative purposes.

TRANSHUMANCE: Patterned movement of people, such as the seasonal population shifts up-and down-slope in the Sierra Nevada.

VERNAL POOL: A pool habitat which may be loosely defined as a small depression, usually underlain by some subsurface layer which prohibits drainage into a lower soil profile, and thus forms a seasonal pool during the winter months.

HAYSTACK RESERVOIR

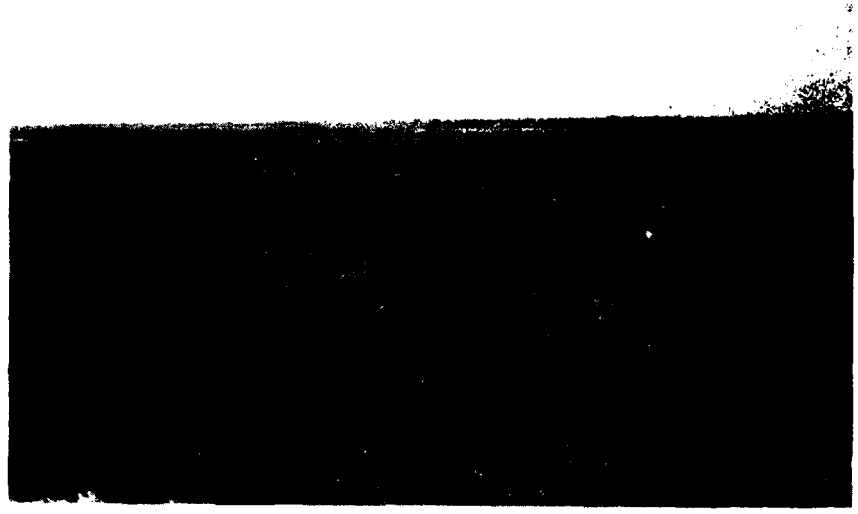
List of Plates: 1, 2

Plate 1

A.	CA-Mer-228	looking south
B.	CA-Mer-228	bowl mortar

Plate 2

A.	CA-Mer-229	looking north
B.	CA-Mer-229	bowl mortar



A

B

PLATE 1

A

B

PLATE 2

APPENDIX 1

ETHNOGRAPHY, ETHNOHISTORY, AND HISTORY OF THE MERCED COUNTY STREAMS PROJECT AREA

by

Jeanne Muñoz

with

Melinda Peak

INTRODUCTION

The Research

Standard ethnographic, ethnohistoric, and historic research was conducted to gather data for this part of the report. Published and unpublished documents, reports, records, and maps were examined at local institutions (libraries, historical societies, county offices); at California State University, Fresno (Woodward Special Collection); at the Stockton-San Joaquin County Public Library; at the California State Library, Sacramento; at the California State Historical Society Library, San Francisco; and at the Bancroft Library, Berkeley. Interviews were held with local historians, ranchers, Native Americans, and with professional colleagues with research interests and experience in the local area (see Appendix 2). Data were evaluated using standard criteria (see Haekel 1973).

Problems in Conducting the Research

Local data sources presented some very real difficulties. Research on the early years of Mariposa County was hampered by the lack of documents. The courthouse burned in 1854, destroying county records from 1849 to that date. In addition, a number of the early deed books are missing (Vols. E, F, H, I, J, K, L, and V). Tax assessment roll books begin in 1858 and have a continuous run from 1860 to the present. There are no map books to accompany the early records, and locational data are vague for the properties being taxed (a typical entry might be "Bear Creek"). Section and township information is first provided in 1871.

The Merced County Courthouse is currently undergoing interior remodeling, and the archival materials of the Merced County Historical Society, previously stored on the first floor of that building, have been removed to a storage facility and are inaccessible. Other county records (such as tax assessment

rolls) are in storage elsewhere, and keys to the storage facility are unavailable. The Historical Society's collection of prehistoric artifacts is also in storage. Access to these materials will not be possible before the first part of 1983.

There are a number of general histories available for Merced County (e.g., Elliott and Moore 1880; Outcalt 1925; Radcliffe 1940; Clark 1955; Graham 1957), and several particularized histories as well, such as the history of Atwater (Atwater History Club 1958), of LeGrand (Nolan 1972), of the Merced Irrigation District (McSwain 1978), and of Merced County schools and school districts (Merced-Mariposa Retired Teachers Association n.d.). There are no comparable general histories for Mariposa County, although a wealth of material exists on Fremont and there are a number of good accounts of the gold rush era (e.g., Collins 1949; Wood 1954) and on Yosemite. These sources, and material gained from interviews, were used to present a more complete picture than that afforded from primary archival data only.

Organization of the Data Gathered

The information gathered has been synthesized and is presented below in terms of historical themes.

EXPLORATION AND EARLY SETTLEMENT, TO THE 1840s

Exploration was minimal and had no great effect on the area other than the bestowing of such place names as Merced and Mariposa by the Spanish. The explorer Gabriel Moraga and his diarist Pedro Muñoz came through the area in 1806, failing to observe any Native American settlements. Other Spanish forays were made into the lower (or northern) portion of the San Joaquin Valley during the early part of the 18th century, and nearby Indians were removed to the missions. Land grants were made by the Mexican government in the 1830s and 1840s near, but outside, the Project Area. Jedediah Smith (and probably others) trapped furs in the 1820s and John Charles Fremont and Joseph Reddeford Walker explored in the 1840s.

NATIVE AMERICANS OF THE STUDY AREA

Identification of the Original Inhabitants

Anthropologists and ethnohistorians do not know with certainty the tribal identity of the early inhabitants of the Merced County Streams Project Area. No named villages are located within the Area (Kroeber 1925 Plate 37; Latta 1977 Endsheet; Levy 1978:400; Wallace 1978:462), and there is uncertainty as to tribal affiliation of some of the groups which

occupied nearby areas (Kroeber 1925:474). Merriam (1907) shows part of the area as Southern Miwok (Map 1), but Cook assigns the entire Project Area to the Southern Miwok (see Map 2).

Wallace (1978:462), on the other hand, assigns the downstream and plains portions of the area to the Yokuts, showing the Coconoon Yokuts on the north side of the Merced River, the Nopchinchi Yokuts on the west side of the San Joaquin River between the Chowchilla River and present-day Firebaugh, and the Chauchila Yokuts on the north side of the Chowchilla River. Kroeber states that the last-named group is "the last tribe (of Northern Valley Yokuts) until Stockton is reached, concerning whom anything definite is known" (1925:485). Personal extensive research (Muñoz 1976a, 1976b, 1980) and information from Castillo (1981), who has also conducted in-depth research on the area, does not support either Yokuts or Miwok occupation of the downstream and plains portion of the Merced County Streams Project Area during historic times; it does provide evidence of lack of occupation by any Native American group at least as early as 1806. (Archeological evidence may, of course, provide the necessary data to determine protohistoric occupation of the area; see Native Americans of the Project Area, below.)

It is possible that Northern Valley Yokuts occupied the plains and that Southern Miwok held the foothills of the area in prehistoric times, for Kroeber states, in a discussion of the western boundary of the Southern Miwok (1925:443) that

> . . . it has sometimes been assumed that the Miwok ranged as rightful owners over the whole eastern and more fertile side of the lower San Joaquin Valley, but the evidence is nearly positive that this tract was Yokuts, and that the precise commencement of the first foothills marked the boundary between the two stocks.

Native Americans of the San Joaquin Valley, 1800-1855

A brief review of the history of the Native Americans of the San Joaquin Valley between 1800 and the end of the gold rush may help explain the uncertainty of tribal occupancy.

The historic era in California is usually said to start in 1769 with the Spanish overland exploration/missionizing expedition of Portolá and Serra. The first contact with Native Americans of the Project Area did not occur until 1806, when Gabriel Moraga, with Father Pedro Munoz as his diarist, entered the San Joaquin Valley. The party camped on Bear Creek in Township 8 South, Range 10 East, on September 27 (Cook 1955a: 48), then explored to the north, discovering and naming the Merced and other rivers, returning south early in October. Cook (1960:284) notes:

> . . . Moraga's party stayed close to the eastern edge of the valley. On the seasonal streams found in this area (including, it is assumed, Black Rascal, Burns, and Bear creeks) there was a distinct absence of permanent Indian settlements.

Many villages were noted, however, to the north (Merced River and beyond) and to the south (on the San Joaquin). It is possible, of course, that unobserved villages existed, perhaps upstream from Moraga's route, hidden from view by the foothills. It is even possible that Indians from the general area were later taken to one or another of the missions, as it is known with certainty that Nopchinchi Yokuts immediately to the southwest were taken in (Castillo 1981).

If unobserved villages did exist, or if the Area was populated after Moraga and Muñoz came through, the population may have been wiped out in the epidemic of 1830-1833, when malaria spread from Oregon through the entire Central Valley (Cook 1955b). Cook (1955, 1978:92) estimates that from one half to three quarters of the total native population of the Sacramento and San Joaquin valleys may have died in this epidemic. Perhaps present-day eastern Merced and western Mariposa counties were particularly hard hit, and the Area was deserted by the survivors, thus explaining the lack of description of the local Indians by Anglo Americans.

During the gold rush the Indians in the general area were further decimated (by one means or another) beginning in 1849 and particularly 1850 and, as a result, a reservation system was authorized by the U.S. Congress in an attempt to protect both Indian and non-Indian. The first treaty signed by Commissioners Redick McKee, G. W. Barbour, and O. M. Wozencraft and the "chiefs, captains, and head men" of various groups of Indians established the Merced River Reservation between the Tuolumne and Merced rivers. The name of one of the tribal groups represented in the treaty--the Coconoon-- is described by Kroeber (1925:474) as uncertain as to its tribal affiliation, but is mapped by Wallace (1978:462) as a Northern Valley Yokuts group occupying the north bank of the Merced River near its juncture with the San Joaquin River.

The names of other groups in the treaty do not appear in modern anthropological literature (except for Hodge 1907-1910), although some appear in various ethnohistoric and historic accounts. The "Po-to-yun-te," for example, are called "potoyensess" by Ward in his 1851 account (Collins 1949:55-56), and are described by Ward as living near the trading post on the Merced River (close to present-day Merced Falls). In 1859, the Indian agent at the Fresno River Agency reported to the Commissioner of Indian Affairs that one hundred ten "Poto-en-cies" had "abandoned their native land, the Merced Valley and are now on the Chowchilla" (Lewis 1860). This is the location assigned them by Taylor on his map of 1864 (Heizer 1941).

Adam Johnston's map of 1852 shows "500 Indians" living on the "Merced River" (Map 3), but his accompanying report (Johnston 1853) does not provide locational data by tribal group or ethnographic description. Howard, in his reminiscences (Cossley-Batt 1928), provides ethnographic material, but mostly for Northern Miwok, even though he settled in Southern Miwok territory. Eccleston's diaries (1849-1854), written in the area, contain important ethnographic details, but tribal affiliation (other than either Yokuts or Miwok) is uncertain.

In sum, there are inadequate data to assign with certainty the Project Area to one or another specific Native American group. It may have been entirely Yokuts territory at one time, with Southern Miwok moving in after decimation and/or abandonment. The foothills may have been a transition zone, shared by both groups. Or the Yokuts may have held the plains, the Miwok the foothills. Or, more likely, it was unoccupied from some unknown time before 1806 until settlement by non-Indians.

Ethnographic Overview: Miwok and Yokuts

The sociocultural systems of the two groups which may have occupied the Area--the Miwok and Yokuts--were very similar (Gayton 1948:362), and it is therefore possible to describe accurately the putative aboriginal inhabitants of the Project Area even though their identification cannot be determined conclusively.

The Native Americans derived their subsistence from the abundant natural resources of the plains, foothills, and mountains (fish, game both large and small, grasses, seeds, tubers, fruits, berries, nuts), with primary caloric reliance on the grasses, seeds, and particularly the nuts (e.g., acorns) gathered by the women. Men hunted, and thus provided the more prestigious food--meat--and both men and women fished (Gayton 1948: 185). Food was usually obtained within the recognized local territory of each cultural group, supplemented with food obtained during regularized seasonal trips into other areas. Trade with other groups for items not available locally was common (Davis 1961).

Permanent villages were sometimes as large as several hundred (Cook 1955a), and were kin-based in their sociopolitical organization. Residence was usually patrilocal, descent was patrilineal, and moiety or lineal exogamy was the rule (Gayton 1948; Gifford 1926). In some areas, one town served as the center of economic, political, and religious activities for smaller satellite villages (Merriam 1967). Caches of food, treasures, and other goods were maintained at the central town, and there were held important political meetings and religious ceremonies (Bean 1974:15). Each of these centers had one or more chiefs, men who were usually the heads of lineages.

Chieftainship was an inherited status, and chiefs were ranked according to the position of their lineage or according to linkage with particular totem figures (Gayton 1932:372-373; Merriam 1967:340, 347; Bean 1974:22).

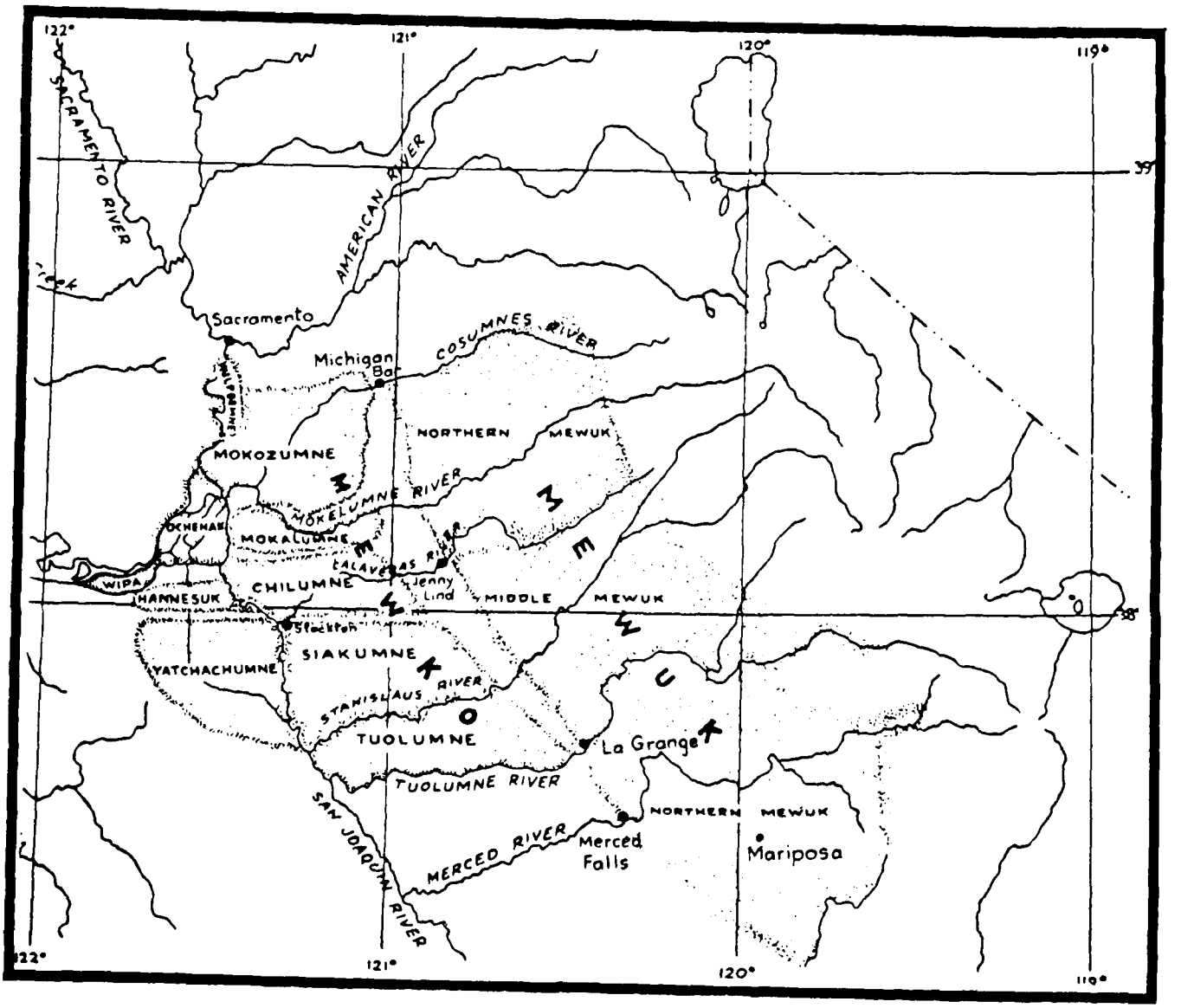
Natural Setting of the Original Inhabitants

The territory occupied by the Northern Valley Yokuts and the Southern Miwok was part of the San Joaquin Valley and the adjacent foothills and mountains of the Sierra Nevada. The San Joaquin Valley extends some 280 miles north to south, from the Stockton Delta to the Tehachapi Mountains; the width of the valley averages 50 miles. The valley floor (the plains) is flat and virtually featureless except for waterways. In prehistoric times, the southern or upper portion of the valley was characterized by two major lakes, and sloughs, marshes, and deltas were throughout the entire valley. Two major rivers run parallel with one another from the Sierra, then diverge on the valley floor, the Kings to the south, and the San Joaquin to the north. Both are fed by smaller streams, most of which enter them, at right angles, on the plains. During heavy snow melt or excessive rains, the two river systems intermingled and much of the valley floor was inundated. Early observers reported on this condition, as the following description made by topographic engineer Lieutenant George H. Derby of conditions in the spring of 1850 illustrates:

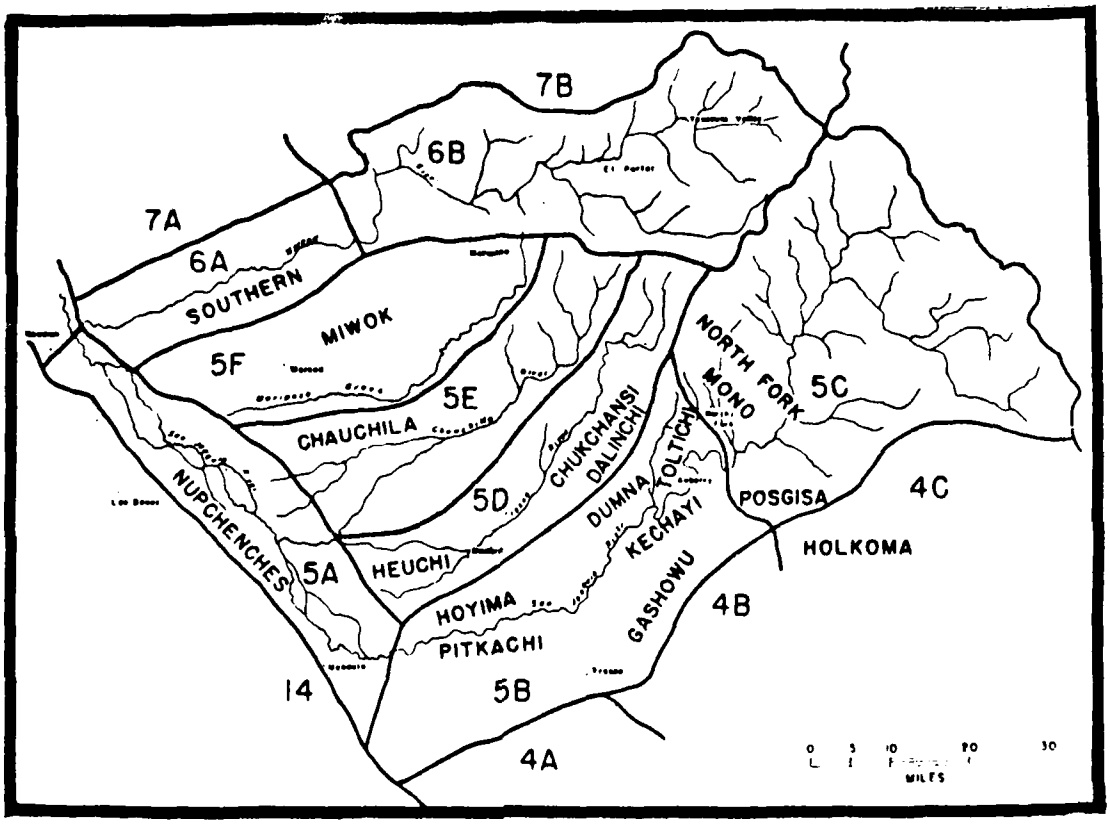
> We left the ferry . . ., and traveling southwest for 19.84 miles encamped on the edge of a swamp at a point about three miles above the mouth of Kings river and immediately opposite (an Indian) village. . . . I was anxious to cross the river and visit it, but was informed by the Indians, a large body of whom swam across to our encampment, that all the country in the vicinity was overflown, and that it would be impossible to cross, even if we were to construct "balsas" of tule owing to the rapidity of the current. It was evident enough that the country was overflown, and as I found it impossible for anything but an Indian to get even to the bank of the river, I was reluctantly obliged to give up my idea of crossing at that point (Derby 1850).

The wetlands, with their tules and marsh grass, contrasted with the rest of the plains, which were sparsely covered with vegetation most of the year. The Spanish priest, Pedro Moraga, stated in September, 1806, that:

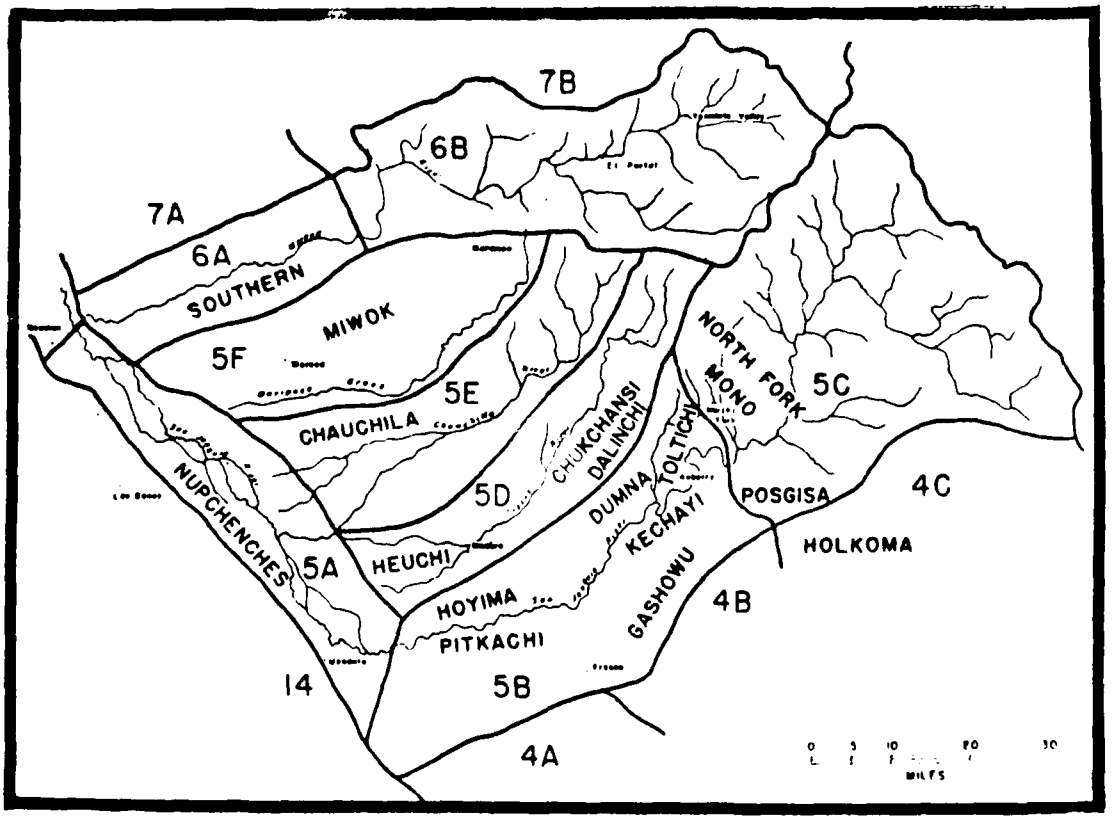
> From the point where we left the tule swamps to this place (Bear Creek) the land is really miserable. Salt flats and alkali patches, with innumerable ground squirrel burrows are all that one can see. . . . The forage was extremely scanty, and that the country appeared to have been burned



Map 1: Native Americans of the Merced County Streams Project Area, according to Merriam (1907).



Map 2: Native Americans of the Merced County Streams Project Area, according to Cook (1955a).



Map 2: Native Americans of the Merced County Streams Project Area, according to Cook (1955a).

over by the Indians did not conceal the fact that the land is very poor (in Cook 1960:284).

Yet in the spring the valley can be beautiful:

> It was the spring of 1851, and the San Joaquin Valley was in an absolute state of nature . . . upon each day's march the landscape presented a striking change of attractions in the flowers that overspread the ground. They alternated in color: one day the flowers were red, the next white, then blue and yellow. The atmosphere was clear and wholesome. . . . (Keyes 1884:234).

Animal life was abundant and varied. An observer in 1851 reported seeing

> . . . a band of several hundred elk, and the motion of their antlers as the animals ran away was worth a journey across the continent to witness. Large troops of wild horses, many deer, antelope, and coyotes were constantly on view (Keyes 1884:234).

The horses had been introduced by the Spanish and were noted as early as 1806 (Muñoz in Cook 1960). Their numbers were increased in the 1830s, the indirect result of drought and consequent reduction of grain crops and natural forage in southern California. Ranchers and farmers were ordered by the Mexican government to kill their excess horses in an effort aimed at saving as many cattle as possible, but many chose rather to drive their stock into the San Joaquin Valley, intending to retrieve them at a later time. The animals multiplied rapidly, filling the entire valley (W. Smith 1939:165-166).

Other animal resources were fish (including salmon), mussels, turtles, migratory waterfowl, and smaller mammals and birds. Insects were numerous and varied, and large numbers of mosquitos bred in the wetlands.

The climate was as it is now--that is, relatively mild, but with excessively hot days (over 100 degrees) in the summer and some very cold days (below freezing) in the winter. Rainfall (a scant 10-15 inches a year) is concentrated between November and April, and there are cyclical droughts and floods. "Tule" fog of zero visibility may be held at ground level by atmospheric conditions for days.

Contemporary Native Americans

None of the eight Native Americans consulted (see Appendix 2) knows the ethnic identity of the original inhabitants of the Merced County Streams Project Area, either for precontact or early historic times. None of them knows of any specific

village site (other than what they have learned from recent archeology), of gathering sites, or of sacred sites in the area. All of them are interested in the findings of the Project and expressed the desire to visit sites during survey or test excavations.

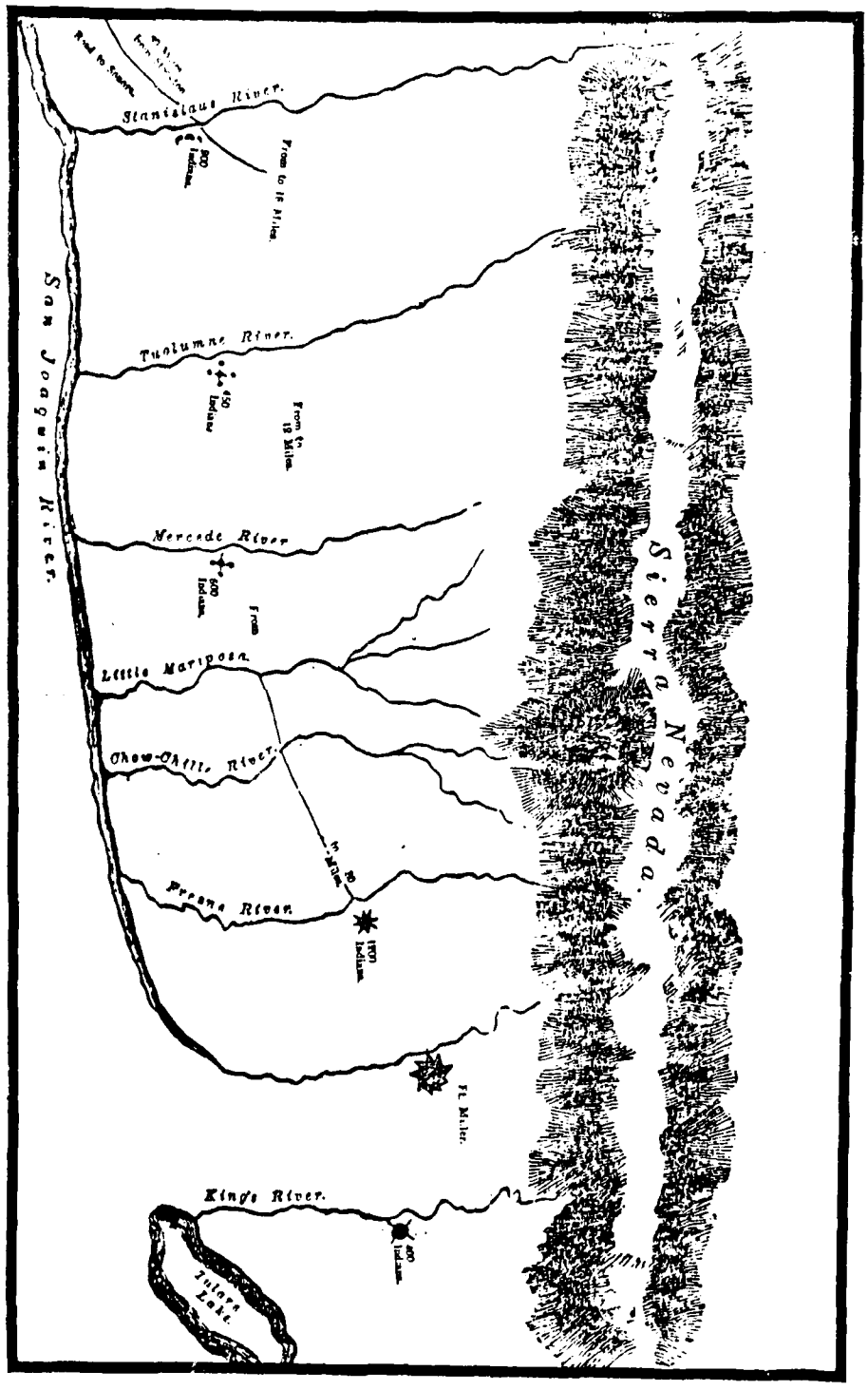
Native Americans throughout California (and other states as well) are concerned about the treatment of burials found through archeological research, and Indians of Merced and Mariposa counties are no exceptions. They are concerned about all Native American burials, no matter the time depth and no matter how distant the genetic relationship. They prefer that any skeletal material found in excavation be covered back over and that the grave goods remain with the body. They are usually willing that in situ measurements, sketches, and photographs be made. If the burial will be disturbed or destroyed in construction, reburial is a possibility but is an unhappy compromise, expensive to the Native Americans financially, spiritually, psychologically, and emotionally.

ECONOMIC, SOCIAL, COMMERCIAL, AND DEVELOPMENT HISTORY

Mining Frontier

The Southern Mines opened up late in 1848 in the Tuolumne River area, and gold mining camps rapidly sprang up along streams and rivers throughout the Sierra Nevada foothills, spreading as far south as the Fresno River by 1850. Men relocated frequently, individually and collectively, in response to stories of richer diggings elsewhere. The earliest camps were laid out haphazardly and until the late 1850s the majority of the houses were built of wood framing and canvas walls, partitions, and roofs. By the late 1850s, cabins with log or board sides, a mud and stone fireplace, and canvas roof came to be standard (Paul 1947:75).

Supplies were brought in from Stockton over what came to be called the Stockton-Millerton Road. The road ran east from Stockton to the foothills, then followed closely the edge of the hills (to avoid the often impassable wetlands), passing through Knight's Ferry, La Grange, Merced Falls, Union (a post office of the late 1800s located in the Northeast ¼ of Section 2, Township 8 South, Range 16 East, USGS Owens Reservoir Quadrangle), Newton's Ferry (on the Chowchilla River), and ending at Fort Miller (later Millerton) on the San Joaquin River. The road marks the boundary between Merced and Mariposa counties and is visible today at the intersection of the county line and Highway 140. The quantity of freight hauled on the road was immense, and large freighting businesses were built up. Hundreds of men and thousands of mules and horses (and a few oxen) were employed, and numerous stopping places (usually a



Map 3: Distribution of Reservation Indians in the San Joaquin Valley, 1852 (Johnston 1852).

ranch, sometimes a hotel, plus stables and corrals) were necessary for overnighting. The nearest regular stopping place to the Project Area may have been Howard's Ranch, about one mile from Burns Reservoir, in Section 36, Township 5 South, Range 15 East, U.S.G.S.

Trading centers or towns developed throughout the mining district, the nearest to the Project Area being Indian Gulch (Section 3, Township 6 South, Range 16 East, USGS Indian Gulch Quadrangle), approximately five miles north of Bear Creek Reservoir.

Placer mining in the Project Area was short-lived, and no quartz mining claims were made in the Merced County Streams Project Area.

Cattle and Sheep Frontier and Development

Cattle ranching. Cattle ranching became an increasingly important economic activity in the Merced County Streams Project Area from the early 1850s on. The early ranchers grazed their stock on government-owned land, purchasing, by gaining a patent or official conveyance, relatively small (compared to the numbers of acres actually used) parcels of land for ranch headquarters. This practice continued for several years.

Warrants for military bounty lands were made assignable in 1852, and "their principal use in California began from that date" (Robinson 1948:182). These warrants entitled the holders to 160 acres (a quarter section) of any public land in the United States valued at $1.25 an acre; if valued at more than $1.25, the difference could be made up. Many who took advantage of military warrants were speculators, and quickly turned a profit on their "investment."

After 1853, some land was acquired through preemption--i.e., the preferred right of purchase given actual settlers. After May 20, 1862, when President Lincoln signed the first Homestead Act, free land for actual settlers became available.

> Under the Homestead Act of 1862 settlers could acquire farms of 160 acres from unappropriated (i.e., public) lands free of all charges except a nominal filing fee to be paid when application was made at the proper land office. Five years of residence and cultivation were required of the settler before he would be entitled to a certificate or patent from the United States. The privilege of commuting was also permitted--that is, of converting the homestead with a preemption right and paying the regular price per acre (Robinson 1948:168-169).

All of these methods of land acquisition were made use of by cattle ranchers in the Project Area.

The foothills along the county line were and are unsuited to farming (except for some non-irrigated grain crops), and cattle ranching continues to be the primary economic activity there. Ranch headquarters were built for each ranch, with house, barn(s), shop(s), corrals, scales, wells, etc., located in one complex (as at Burns Creek Reservoir) and with other buildings, corrals, watering troughs, holding pens, etc., at strategic locations on the property.

Sheep ranching. Sheep ranching began in the Merced County Streams Project Area at least as early as the late 1850s. One of the first sheep ranchers was Cyrill C. Smith, who arrived in California early in 1852, joining his brothers, Pardon and Dorillus, in gold mining at Woods Crossing. Cyrill took time to help with harvesting in June of 1854:

> I have been down twenty miles towards Stockton a haying on dry creek valley. The best wheat and barley grows there I ever saw (;) the hay is mostly wilde (sic) oats from one to two tons per acre. The most splendid Country I ever saw (C. Smith 1854).

This experience may have influenced him away from the mines, for at least as early as 1859 Cyrill, Dorillus, and James (another brother) were raising sheep.

> I am at work for Cyrill & Dorillus attending a band of sheep for them. We live about four miles N.W. from La Grange and Eighteen S.W. from Jamestown . . . there are about seven or eight hundred in this band. They have moved the other band of about eighteen hundred over the river about six miles for better food (J. Smith 1859).

The Smiths were sheep ranching in the general Haystack Dam area by 1872 and, according to the Merced County Assessment Roll, they owned 5,000 sheep valued at $7,500 and 11,000 acres of land valued at $13,750. Improvements on the land must have been minimal as they were evaluated at $50.00. This land was northwest of the Haystack Dam area, but by 1881 C. C. Smith owned all of Section 19 (directly in the proposed Haystack Dam area), the North ½ of 20, and the West ½ of the Northwest ¼ of 29 (Merced County Assessment Roll, 1881). His stock had increased to more than 17,000 sheep, and his other taxable possessions indicate that he was very successful:

2 watches	$100
furniture	200
sewing machine	25
52 tons grain	780
3 wagons	175

2 harness	$ 25
3 American horses	300
2 colts	50
11 half breed horses	295
3 dozen poultry	10
1 mule	20

By the time of Cyrill Smith's death, he owned 30,000 acres. These were inherited by his son, Elmer D. Smith (Aucutt 1933), including holdings in the proposed Haystack Dam area (Official Map of Merced County 1909).

J. W. Mitchell was another early sheep rancher in the Merced County Streams Project Area. Mitchell bought thousands of acres of land in the San Joaquin Valley at $1.25 an acre, and at one time he owned more than 100,000 acres in Stanislaus and Merced counties (Mitchell 1877), including land at and near proposed Castle Dam

> Next he bought thousands of head of sheep to pasture off the wild grass, weeds and brush that grew on his land. He also bought thousands of head of horses and cattle (Atwater History Club 1958:20).

Sheep were also raised in the Burns Reservoir area (e.g., by John B. Bennett), but sheep ranching did not continue to thrive as did cattle ranching. Those areas in and near the foothills which had been used for sheep ranching became cattle grazing areas or supported grain (dry) agriculture. Those areas farther out on the plain were converted initially to grain agriculture, later to irrigated crops.

Farming Frontier and Development

Dry farming. Farming began in the Merced County Streams Project Area in the early 1850s. Agriculture was a challenge to the new settlers, who were unfamiliar with dry farming, knew little if anything about irrigation, and had bad luck as well. In 1854, for example, smut, drought, and insects created problems with crops througout the San Joaquin Valley (Alta California 1854), but knowledge gained from experiments in the northern part of the valley with dry farming, with types of wheat suited for the climate, and with farm machinery made possible the development of farming on a large scale.

Farmers moved into the area in increasingly large numbers, gaining patents to the public land and planting grains. Disputes between farmers and ranchers were not uncommon, occasioned by crop damage and/or destruction by cattle. The ranchers insisted that the farmers were responsible for fencing the cattle out; the farmers insisted that the ranchers were responsible for fencing the cattle in.

> Cattle were very troublesome, and had to be herded night and day to prevent their encroaching on the fields and destroying the growing grain (Lewis Publishing Company 1892:74).

The ever-increasing farmer population became politically powerful and in 1874 the "No Fence"--meaning the farmers did not have to fence--law was passed.

Grain was grown in and near the foothills and in the downstream and plains areas also. In the Castle Dam area, e.g., J.W. Mitchell's sheep cleared his land of ground cover, following which he encouraged others to dry farm it, renting it out in 2,000-acre parcels. He built a house for each tenant and furnished them with plows, grain seeds, wagons, and farm machinery. He himself also grew grains.

Intensive agriculture. Wheat and other grain farming, along with cattle ranching, continued to be the main economic activities of the eastern Merced-western Mariposa counties areas through most of the 1880s, but the development of an irrigation system by Crocker Huffman Land & Water Company in 1888 made possible intensive agriculture and resulted in further changes in the area beginning about 1900. Numerous crops were introduced, including fruit and nut trees, vegetables, and cotton. Dairy farming developed with the introduction of irrigation and the assurance of adequate feed. Turkeys were found to do well in the area.

Railroads, Other Transportation, and Communications

Railroads. The railroad came to Merced County in 1872, resulting in diminished use of the Stockton-Millerton Road. Bridges were built across creeks, and freight was hauled by wagon team from the railroad line to the plains and hills to the east. Complaints were made of farmers who changed the routes of roads "to suit their own convenience or whim," and, as a result, some of the bridges were left without roads to connect them (Outcalt 1925:308).

The importance of the railroad in the changing economy of the Project Area cannot be overstated. The population of the mining country of the foothills had dwindled by the 1870s, and the major market was to the north, in San Francisco, from whence agricultural products were shipped worldwide. The railroad provided reliable, satisfactory transportation, and was thus an impetus for intensive agriculture development.

The railroad had another effect on the growth and development of the area. It advertised the "health, wealth, and prosperity" attainable in California, and offered low fares to get here. Land was still easy to obtain, and many of the earliest

arrivals (by train and otherwise) became large landholders (i.e., over 5,000 acres).

Towns developed in the area with the coming of the railroad (only Plainsburg predated the railroad, and it diminished in importance once the system was in operation), and increased in size as the rural population increased. The population of Merced County grew from 8,085 in 1890 to over 15,000 in 1910 and more than 25,000 by 1920. Part of this growth was the result of divisions of land into colonies or other subdivisions. The first attempt to establish a colony (for Hollanders on 4,000 acres near Lake Yosemite) was a failure, as were some of the others, but most were distinct successes, contributing to the development of intensive agriculture and to the increase of population as well--and all of this an outgrowth of the railroad system.

Other transportation. As noted above, the only established route of transportation into the Merced County Streams Project Area prior to the railroad was the Stockton-Millerton Road. It ran east from Stockton to the foothills, then south above the seasonal wetlands. The Stockton-Millerton Road continued to be the most important route of transportation until the early 1870s.

> Other roads were created in the early days by the simple process of dedicating a more or less indefinite strip of country to travel. The line was made definite upon the ground by traveling over it, but in the case of washout and ruts the travelers pioneered a new route alongside the old one. There was plenty of land, and for the most part it was public land, and was used only for cattle range, except the comparatively small areas along the river and creek bottoms (Outcalt 1925:307).

After the railroad was established on its north-south route, east-west roads developed from the railroad tracks to the foothills.

Communications. During the gold rush, mail arrived once a month. It was carried into the Southern Mines by the express service of Reynolds & Company, bought out by Wells, Fargo & Company, which built an office in Hornitos in 1854 (Chamberlain 1972:52), and charged $5.00 for the delivery of a letter from San Francisco (Clark in Chamberlain 1972:19).

The railroad system established in 1872 greatly improved mail service and other contact with the rest of the United States.

Settlement

Settlement pattern. Settlement during the gold rush was in the foothills, along streams and rivers. Mining camps were often short-lived, as were trading centers or towns. Population density was high in the mining areas until about 1860. By that time, many miners had grown discouraged at their meager earnings and had either returned home or found other ways to earn a living. Often the new work was related in some way to providing food, drink, mail, or supplies to the miners. Trading posts were set up, express services provided, and teams and wagons hauled in machinery (stamp mills, for example), building materials, etc. Some moved westward and became cattle ranchers.

Merced County was formed out of Mariposa County in 1853, and the Stockton-Millerton Road became the county line. For many years the bulk of Merced County's residents lived in the area near that line.

> Scarcely too much emphasis can be laid upon the very close connection which existed between the new county, with its activities creeping out into the big plain of the San Joaquin, and the mother county in the hills. The new county was creeping out onto the big plain of the San Joaquin, it is true; but its markets, its associations, the former dwelling-places of many of its people, a large part of its social connections, and numberless other bonds were across the line. The activities of the two counties were different in character from the beginning, from the very nature of their topography; but in many important respects they formed one community. The very line which divided them politically from 1855 on, the Stockton and Millerton Road, the main (indeed the only) artery of travel between north and south, was a bond of union rather than a barrier (Outcalt 1925:163).

The primary activity "creeping out" into the San Joaquin Valley was cattle ranching, and the settlement pattern of the 1850s and 1860s reflects this. The Merced County Assessment Roll for 1857 shows that most of the population was located along the Merced River from Merced Falls out onto the plains almost as far as the San Joaquin River, and along creeks from Burns and Bear to the Chowchilla, here stretching no farther onto the plains than about halfway to the San Joaquin.

> Apparently the general pattern for the east side (of Merced County) in these early years of settlement was for the young miner to come down from the gold field, establish a residence and ranch, and run it alone or in partnership with another man. Eventually he would feel the need to begin a family and would return to his former home to find a wife. Having done so, both would return to California to settle permanently (Graham 1957:41).

The settlement pattern in the foothills continued during the grain farming era, though the pattern of land ownership, of necessity, changed. Increasing numbers of new settlers (some from the mines, many from outside the state) arrived to reduce the plain between the foothills and the San Joaquin River to private ownership and to try their hand at farming. The farms were smaller than the cattle ranches, although some of them became very large later on, and the farm population density was higher.

The actual distribution of the population is impossible to determine for this era as the 1880 census data are not divided into units smaller than a county, but Graham (1957:60-61) has correlated soil types with impressions of "old timers," and concludes the following:

> It appears that at the center of the favored piedmont alluvial plain, farmhouses were located on almost every section; in other words, there was about one house to the square mile. On the margins of this belt, the farmhouses became fewer, averaging one farmstead to every two or three square miles. Once outside those areas where wheat farming was carried on, the population became truly sparse.

Merced County population increased dramatically following the coming of the railroad. The 1870 census shows 2,807 individuals living in Merced County, most of them on the east side. By 1880, the population was 5,656; by 1890, 8,085. It is in the areas of intensive agriculture (i.e., mostly the alluvial plains) that population increased the most.

The 1900 Merced County census shows an increase in population to almost double that of 1890, and during each decade after that it increased between 40 and 60 percent. By 1950, it was about 77,000, most of it the result of urban growth.

The population of that portion of western Mariposa County which is part of the Merced County Streams Project Area has gone through the same changes as that of contiguous Merced County.

Ethnic composition. During the early days of the gold rush, most of the miners were from the eastern and southern United States, and were young and single. An analysis of the 1857 Assessment Roll for Merced County shows that:

> With the exception of a very few Spanish names . . . the names are practically all American of the sort that were brought from England (Outcalt 1925:156).

Italians are reported in the Mariposa (town) area in 1849 (Reynolds in Chamberlain 1972:15), and at Indian Gulch sometime thereafter ("Old Timer," in Chamberlain 1972:153-154), and 82 blacks and 1,571 "foreign residents" are recorded in the 1852 state census (Alta California, November 12, 1852).

The picture was probably little changed in the 1860, although this is difficult to determine as the 1860 federal census does not record state or national origin.

The 1870 census shows 2,807 individuals living in Merced County, 611 of them foreign born (Outcalt 1925:299). By 1880, the population was 5,656, 1,700 of whom were foreign born. In 1890 it was 8,085, with over 2,000 foreign born. Most were from China (597), next Ireland (265), then Germany (177), British America (121), Mexico (110), England and Wales (93), France (59), Scotland (38), and Sweden and Norway (27). The bulk of the population during these decades was male (Outcalt 1925:299-300). The first Japanese, Portuguese, and Italians are identified in the 1900 census. The male-female ratio of the native born population was closer to even (3,941 to 3,079) than before, but that of the foreign born was still predominantly male (1,703 to 492) (Outcalt 1925:301).

Ethnic diversity continues to the present day, as is demonstrated by the numerous ethnic organizations listed in the local phone book.

POSSIBLE EXPLORATION OF THE PROJECT AREA

Early Exploration of the Project Area

The Advisory Council on Historic Preservation recognizes that studies focussed on the "lines of march, stopping places, and landfalls of early explorers" are legitimate research concerns (Advisory Council on Historic Preservation 1980:37-38). Cook (1955a) has established the route of the Moraga-Muñoz expedition to a large extent, and full-scale research on that expedition does not seem warranted. Archeologists should, however, keep the expedition in mind during test phase and mitigation procedures.

The route of Jedediah Smith through the general area in the late 1820s is a matter of dispute (see Fletcher 1924, Merriam 1923 and 1924, on this), and material remains recovered archeologically which appear to fit into the 1820-1830 period should be carefully analyzed.

Native Americans of the Project Area

Ethnographic and ethnohistoric data on the Native Americans of the Merced County Streams Project Area are lacking, and it appears that the Area was unoccupied at least as early as 1806. Archeological research should be conducted to determine, to the extent possible, who the late prehistoric residents were (if

any), and why they abandoned the Area. It is known from previous archeological studies that the material culture of the Yokuts and Miwok differs, and archeological evidence might provide data on the following:

Who lived at each of the four specific project areas in late prehistoric times?

Were the foothill/plains areas a transition zone between the two groups?

Was early historic contact made but not recorded by the Spanish?

Did the population die as a result of war or disease?

Were the Chauchila to the south, who had a reputation for being warlike, responsible for the lack of occupancy of the area?

Anglo American Era

The gold rush. The early records for the Merced County Streams Project Area are missing (i.e., those prior to 1854), diaries by gold miners do not provide Project Area-specific data, and there are therefore many gaps in the early historic record. Archeology can help fill these gaps.

Remains of architectural structures (tents, plank or log tent cabins, rock houses with canvas roofs, etc.) provide relative chronological data for the occupancy of an area by gold miners, traders, etc. The areas for Burns and Bear creeks reservoirs should be examined most carefully for such remains, particularly the more ephemeral evidence of tents, tent cabins, and/or tent "cities." This may make possible a partial reconstruction of the cities." This may make possible a partial reconstruction of the early history of the westernmost portion of Mariposa County. Architectural style is evidence also of cultural affiliation or influence, and the inadequate census records may be "fleshed out" by the careful study of architectural remains.

Evidence of Indian-white contact should be sought. Miners often employed Indians, especially in the early years of the gold rush. If, indeed, the Merced County Streams Project Area was abandoned by Native Americans as early as 1806 (and the evidence for this is very strong), the reintroduction of Native Americans, whether California Indian or otherwise, may be easily discernible in the archeological record.

It is possible that data on the Project Area during the gold rush can be derived from early newspapers, but there are problems here. The Mariposa Gazette, established in 1854, has had one of the longest continuous runs of California newspapers. The courthouse in the town of Mariposa has copies of the entire

run of papers available for research. The paper has not been indexed in any way, and use of the papers without a locational name is virtually impossible. Even a page-by-page reading of the paper may not yield specific information on the relatively remote portions of Mariposa County.

Nonlocal papers, such as the San Joaquin Republican and Alta California, were often vague on locational data, and it is hard to predict how much area-specific information they might yield. Examination of newspapers is very time-consuming, and the amount of data to be recovered is unpredictable. Recommendation of research of early newspapers does not seem warranted.

Ranching, farming, and intensive agriculture. The economy of the post-gold rush Merced County Streams Project Area followed the same stages of development as did the rest of the San Joaquin and Sacramento valleys (i.e, cattle and sheep ranching, non-irrigated farming, intensive agriculture, and urbanization), although the timing was not synchronous throughout the entire Great Central Valley. The chronological differences have been ascribed to a variety of "causes," and it would be interesting and valuable to investigate these. Answers to the following questions should give a clearer picture of the economic development of the Project Area, of the San Joaquin Valley, and of the Central Valley.

> What role did Spanish and Mexican land grant titles play in the economic development of the Project Area as compared with the San Joaquin Valley and the Great Central Valley?
>
> Where were the early cattle/sheep ranchers from, and what in their cultural background (if anything) led them to be ranchers instead of farmers? (and the converse.)
>
> Was the choice of location of ranch headquarters culturally influenced or was it a function of natural resource distribution?
>
> Does the location of ranch headquarters provide evidence that many early ranchers were from the southern United States (i.e., did they build on the "crick bottoms"?).
>
> Do the first crops provide evidence of place of origin of the early farmers?
>
> What role did ethnic minorities play in the economic development of the Merced County Streams Project Area?

Some of these questions can be answered through archival research findings, some through archeological research findings. The answer to the last question, for example, may be found in incorporation papers and ledgers of early ranches and farms. The ledgers often include names of farmhands, their places of dwelling, duties, wages, and other details of everyday living.

Since the Advisory Council on Historic Preservation (1980:58) recognizes that the: "contribution of those groups that wielded little economic power, and that were often illiterate, at least in English, to the history of the Nation and its regions are often poorly documented," records concerning them are worthy of serious investigation.

The railroad and urbanization. Since neither the railroad nor urban development existed directly within any of the four dam/reservoir areas (although railroad lines formerly ran just outside the Castle Dam area), it seems unwarranted to suggest research questions related to either the railroad or urbanization.

SITE-SPECIFIC HISTORY: HAYSTACK RESERVOIR

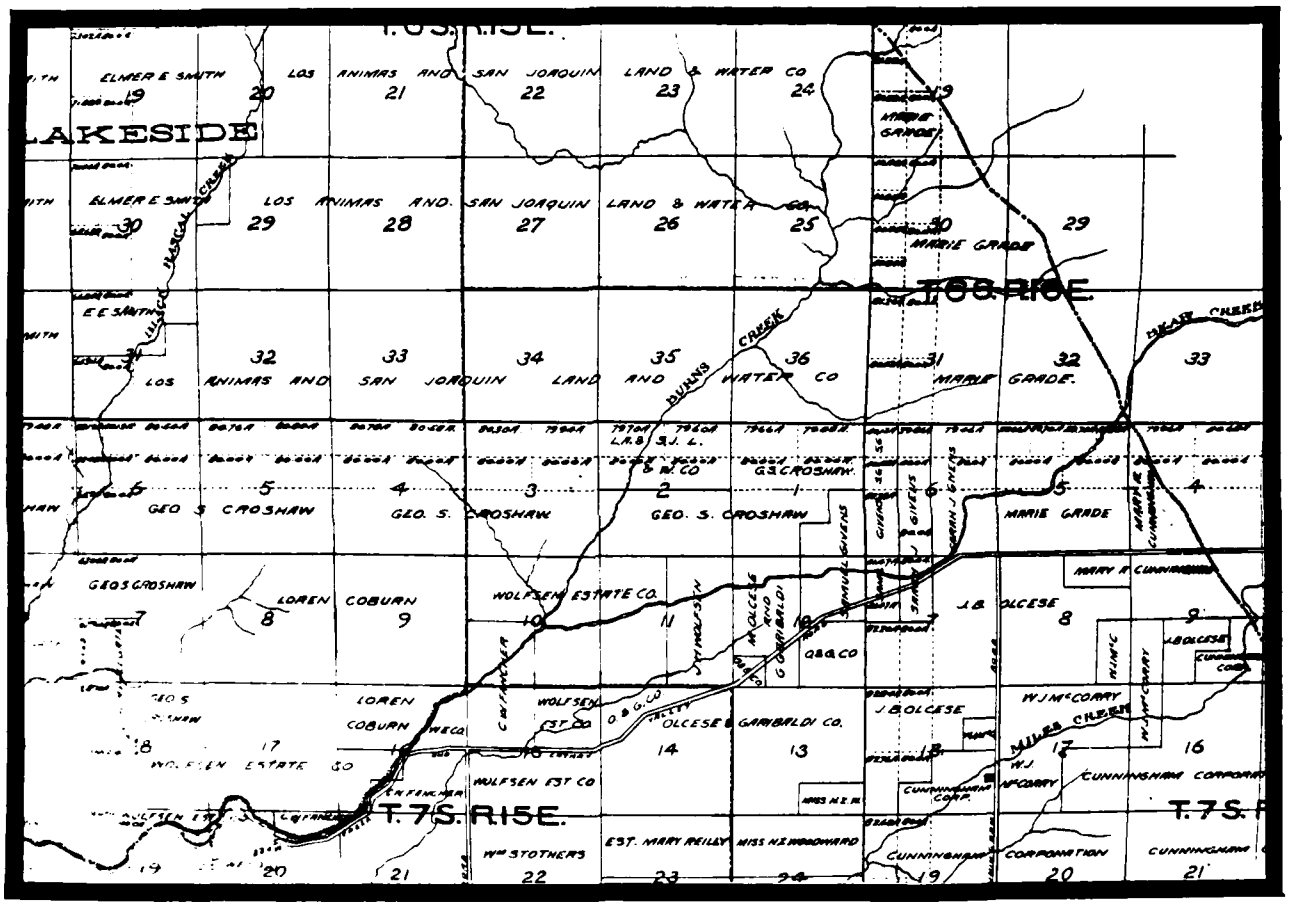
Haystack Dam is scheduled to be built on Black Rascal Creek, a creek whose "sinister story behind its naming is not known" (Gudde 1969:30), sad to say. The maximum pool will inundate parts of Sections 19, 20, and 29 and most of Section 30 of Township 6 South, Range 15 East, USGS Quadrangle, Haystack.

The land is range land and may have been first used as such by Cyrill C. Smith, a sheep rancher. By 1881, Smith owned all of Section 19 (directly in the proposed Haystack Dam area), the North ½ of Section 20, and the West ½ of the Northwest ¼ of 29 (Merced County Assessment Roll 1881). His son, Elmer D. Smith, inherited the elder Smith's holdings in the Haystack Dam area at his death.

The first owner of the remainder of Sections 20 and 29 seems to have been C. W. Salter, whose estate is listed in the Merced County Assessment Roll for 1872. Salter owned a total of 13,960 acres, all in Township 6 South, Range 15 East, valued at $17,450.

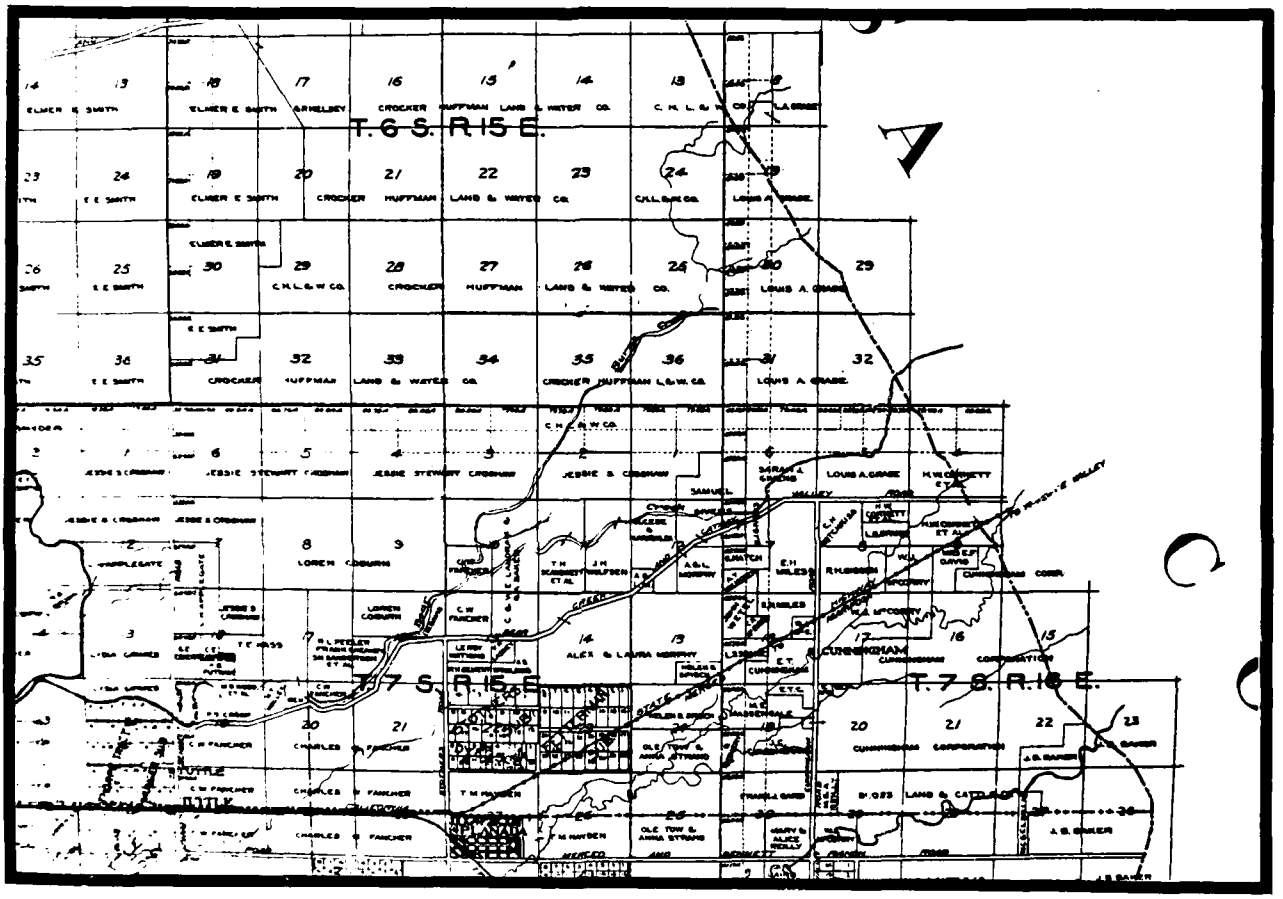
The next owner of the remainder of Sections 20 and 29 was L. U. Shippee, who held the property through 1889 (Merced County Road Plat Book), but no owner is shown for it on the Crocker-Huffman map of 1902. The 1909 Official Map of Merced County shows the owner of the former Shippee property to be Los Animas and San Joaquin Land & Water Company (FIgure 1), and the 1919 map indicates that Crocker Huffman Land & Water Company had acquired it (Figure 2). A bit more than a decade later, the owner of the west half of Section 20 and of the entirety of Sections 19 and 30, and that Universal Land Company owned the eastern half of Section 20 and all of 29.

Today, the land is owned by the Merced County Board of Education, by John Myers, and by Lloyd's Bank. It is leased by Cook Land and Cattle Company, and it is still used as range land.



Official Map of Merced County, 1909
(Courtesy of California State Library)

Figure 1



Official Map of Merced County, 1919

(Courtesy of California State Library)

Figure 2

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APPENDIX 2

INTERVIEWS

As a part of the Scope-of-Work interviews were required to be conducted with Native Americans, local residents, and other individuals who might have information on cultural resources and historical events which were assoicated with the project areas.

In compliance with this task, interviews were conducted by Jeanne Muñoz, Melinda Peak and Ann Peak. Each interview has been summarized.

Meeting in Mariposa
August 6, 1981

Coordinated by Jeanne Muñoz

Eight Native Americans form Merced and Mariposa counties (Nick Brocchini, Fern Fulcher, Les James, Jean James, Jay Johnson, Mary Lewis, Frank Ogler, and Helen Ogler), Patti Johnson of the U.S. Army Corps of Engineers, and Harvey Crew and Jeanne Muñoz of Ann S. Peak & Associates met in Mariposa the evening of August 6, 1981. Johnson, Crew, and Muñoz described the Merced County Streams project, provided maps of the area and copies of reports of previous archeological research in the area for examination. The Native Americans asked questions, examined the materials, and expressed their interest in the project. Names of potential Indian monitors were suggested, and the possibility of other Indians visiting the project area was discussed. General concerns were voiced about such matters as appropriate treatment of burials.

No one of the eight know of any historic use of the project area by Native Americans, nor of any sacred sites or gathering sites ther...

Follow-up (2) to
Meeting in Mariposa:
Interviews with
Jay Johnson

Interviewed by Jeanne Muñoz
August-September 1981

Jay Johnson, a Miwok-Paiute Chairperson and Native American Heritage Commissioner, was consulted about specific concerns among local Native Americans in regard to burials (see Contemporary Native Americans (Appendix 1). He was later asked about petroglyphs in the Yosemite National Park area. He is very familiar with them, and is willing and able to examine those of the project area to determine possible stylistic affiliations.

Follow-up (3) to
Meeting in Mariposa:
Interviews with
Fern Fulcher

Interviewed by Jeanne Muñoz
August-September 1981

Fern Fulcher, a part Miwok resident of Atwater, volunteered to contact another Indian woman in Merced County (Denise Woodruff), and to find out if she might know anything about the Indians of the project area in the 1800s. At least fifteen calls were placed to her, only two of which found her home and well enough to come to the phone. She was equally as unsuccessful in reaching her acquaintance, and no new knowledge was gained.

Follow up (4) to
Meeting in Mariposa:
Attempt to contact
Wahilia Ocampo

Jeanne Muñoz
August 15, 1981

Wahilia Ocampo of the Indian Studies Department, Merced College, was recommended as a source of information by Fern Fulcher. She is out of town, in the process of moving, and the college does not know how to reach her.

Jeffrey Miller
63 So. Beard Blvd.
San Fernando, CA 91340

Interviewed by Ann S. Peak
August 11, 25, 1981

Mr. Miller spent considerable time on the property as a youth. He was shown the petroglyphs and old structural remains by his father.

Mr. Miller provided specific information on historic buildings, petroglyphs, and bedrock mortar sites in the Bear Creek study area. He gave details on the presence of several clusters of historic buildings, one of which had a stone fence in association. These houses were made of slate and had chinmeys, foundations, and floors. One of these foundations was about 20 feet by 12 feet in dimensions. He also stated that there is a stone slab marker with"Chinese" symbols inscribed on the face. However he was uncertain of the exact location.

He also described a stone slab building beyond the project boundaries and near the main Miller ranch headquarters on Miles Creek.

According to Mr. Miller, these buildings had always been called the Chinese Gold Mining Camps and were reputed to date to the 1850s or 1860s.

Mr. Miller also stated that he had never seen arrowheads on the property and did not know of any collection.

John (Rusty) Brocchini
Oak Road
Mariposa, CA 95339

Interviewed by Ann S. Peak
August 14 & 15, 1981

The American Indian Council of Mariposa County was contacted on or about August 14, 1981, about recommending a Native American observer for Peak & Associates' cultural resources survey for the U.S. Army Corps of Engineers' Merced County Streams project. Mr. Nick Brocchini indicated that his son, John (Rusty) Brocchini was available, and had had experience in archeological investigations. Rusty contact Ann Peak, president of the firm, on August 15, 1981, and he agreed to take the position as the Native American observer. He reported for work on August 17, 1981, and worked until September 3, 1981, when the field survey of the four reservoirs was completed.

Dwight Dutschke
State Historic
Preservation Office
American Coordinator

Interviewed by Jeanne Muñoz
August 19, 1981

Dwight Dutschke does not know any Native Americans in the project area.

AD-A127 194 MERCED COUNTY STREAMS PROJECT HAYSTACK RESERVOIR CALIFORNIA INTENSIVE CULTURAL RESOURCES SURVEY(U) PEAK AND ASSOCIATES INC SACRAMENTO CA 25 MAR 82 2/2

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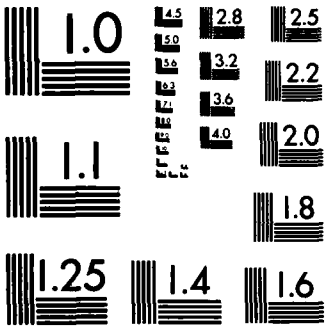


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Nancy Evans
Native American
Heritage Commission

Interviewed by Jeanne Muñoz
August 19, 1981

There are no Indians listed with the NAHC for Merced, Madera, or Mariposa counties. This does not mean none live there, but that none have expressed any interest in participating in cultural heritage or cultural resource activities.

Allen Beck
Fresno City College

Interviewed by Jeanne Muñoz
August 20, 1981

Allen Beck does not know, or know of, any Native Americans in the project area.

Ed Castillo
University of California,
Santa Cruz

Interviewed by Jeanne Muñoz
August 28, 1981

Ed Castillo has been researching Spanish activity in the general Merced-Mariposa counties during the early 1800s. He states that he cannot say with any certainty that the Merced County Streams project area was definitely Yokuts or definitely Miwok. He states that his data suggest that the Castle Dam area was more likely than not Yokuts, and that Bear and Burns areas were either transitional or Miwok. He states also that the existing ethnographic maps are of no real use, as there is so much disagreement.

Dick Johnson
Fresno Unified School District

Jeanne Muñoz
August-September 1981

Attempts to reach Dick Johnson were unsuccessful.

Charles Ostrander
Merced College

Jeanne Muñoz
August-September 1981

Mr. Ostrander is out of town.

Scott Pinkerton
P.O. Box 71
Mariposa, CA 95338

Interviewed by Melinda Peak
September 29, 1981

Mr. Pinkerton has done considerable research on the western portion of Mariposa County, focussed in the county line. He has done research on the stone house in Merced County which had erroneously been attributed to Fremont. He has gone back to the original survey notes for the Fremont grant and identified the location of a log cabin used by Fremont on lower Mariposa Creek.

He has never been to the Bear Reservoir project area, but has surveyed land immediately south of the project area (for Harry Chase). He knew that there were supposed to be petroglyphs in that area. He had never heard of or seen the upright slab enclosures within the project area. He suggested they might relate to the running of hogs from Mariposa to market at Merced.

By the late 1850s, the laws had changed and there were no Mexican miners left in Mariposa County. Many of the towns which had been predominantly Mexican were ghost towns by 1860. Nearby Toledo is a good example of this. The Chinese came into the Mariposa mining areas primarily in the 1860s and 1870s. They reworked many previously worked areas. Many old towns were totally or partially destroyed because the Chinese worked right up to the structures.

Many of the early structures were low--they have not fallen down. They consisted of half walls, topped by canvas. The canvas came from ships abandoned in San Francisco Bay during the Gold Rush.

The Chinese built their structures with at least one door or window oriented to the rising sun. The Chinese structures can also be identified by digging around for Chinese pottery. Also, a number of wild cat bones may be present as the Chinese ate wild cats for strength.

The Stockton Millerton Road was built along the foothills because of the annual flooding. It was the natural selection for a line when Merced County was divided off.

The book, Sam Ward and the Gold Rush, is the best source for the area.

Mr. Pinkerton believes that there is no one left who has information on the sites in Bear Reservoir. He gave the names of several people who lived or worked in the vicinity. They may have seen the sites but probably have no idea of their origin He believes that, in the reservoir area, because it has been held as a portion of a large ranch for so many years, it will not be possible to learn any more about the structures.

Interview with Scott Pinkerton, continued.

Mr Pinkerton has visited the site of Toledo and said that the sites at Bear sound similar. He believes the ovens may be of Mexican origian as they sound similar to those at Todedo, which was primarily Mexican.

Douglas Richard

Interviewed by Ann S. Peak and
Melinda A. Peak
December 10, 1981

Mr. Richards is the present tenant on the Miller properties in Bear Creek Reservoir. He stated that he did not know of any arrowheads, projectile points, or other artifacts found on the property. He was aware of some of the rock art, but had not found CA-Mrp-606 and several other of the petroglyph loci. He was also unaware of the presence of the prehistoric village sites, although he had seen all of the historic structures.

Marcus Arguelles
2290 W. Lopez Avenue
Merced, CA 95340

Interviewed by Robert Gerry
March 30, 1982

Mr. Arguelles is a Ph.D. candidate in archeology and resides in Merced. As a local resident and an archeologist, it was suggested he be contacted for information on the project areas.

Mr. Arguelles was familiar with the location of the project areas, but had no knowledge of any sites within or near the project area and did not know of any collections of artifacts from there. He recommended Mr. Charles Ostrander of Merced Junior College as the most knowledgeable in Merced area archeology and suggested we contact him.

APPENDIX 3

AUGER TESTING

The auger test holes (AT) were done with either a three-inch auger, or if the soil was too rocky, a shovel was used. The test holes were taken to sterile soils, or as far as the auger or shovel could effectively achieve. Shovel testing becomes difficult below one meter in a hole no wider than the blade. Sterile in this context means cultural deposits are absent, whether a midden development or simply an artifact-bearing deposit. It is admittedly difficult to determine a non-midden cultural deposit, since only artifacts provide the necessary evidence. All soil was shovel broadcast and carefully examined for artifacts. No screening was done. Upon completion of the excavation of the auger holes, they were backfilled.

AUGER LOGS

Haystack Reservoir

CA-Mer-228

Test Hole #1

Depth:	0-60cm, bedrock
Soil:	silty clayey loam, dark brown
Artifacts:	fire-cracked rock
Location:	38 degrees, 8 meters from datum

Test Hole #2

Depth:	0-30cm, gravel bed
Soil:	red-brown clayey loam
Artifacts:	none
Location:	102 degrees, 21 meters from datum

Test Hole #3

Depth:	0-20cm, gravel bed
Soil:	red-brown clayey loam
Artifacts:	none
Location:	45 degrees, 67 meters from datum

CA-Mer-229

Test Hole #1

Depth:	0-50cm, sterile
Soil:	dark brown silty loam
Artifacts:	none
Location:	140 degrees, 18 meters from datum

CA-Mer-229 (continued)

Test Hole #2

Depth:	0-50cm, sterile (gravel)
Soil:	silty loam, dark brown with pebbles
Artifacts:	none
Location:	320 degrees, 50 meters from datum

Test Hole #3

Depth:	0-50cm to gravel
Soil:	silty loam, medium brown
Artifacts:	none
Location:	200 degrees, 50 meters from datum

CA-Mer-233

Test Hole #1

Depth:	0-40cm, sterile
Soil:	midden, silty loam, dark brown
Artifacts:	flakes, fire-cracked rock
Location:	34 degrees, 12 meters from Datum A

Test Hole #2

Depth:	0-35cm, sterile
Soil:	midden to light brown silty loam, sterile
Artifacts:	none
Location:	35 degrees, 65 meters from Datum A

Test Hole #3

Depth:	0-35cm, sterile
Soil:	silty loam, light brown, sterile
Artifacts:	none
Location:	146 degrees, 75 meters from Datum A

CA-Mer-234

Test Hole #1

Depth:	0-50cm, sterile
Soil:	clayey, silty loam, medium to dark brown midden
Artifacts:	none
Location:	315 degrees, 9 meters from datum

CA-Mer-234 (continued)

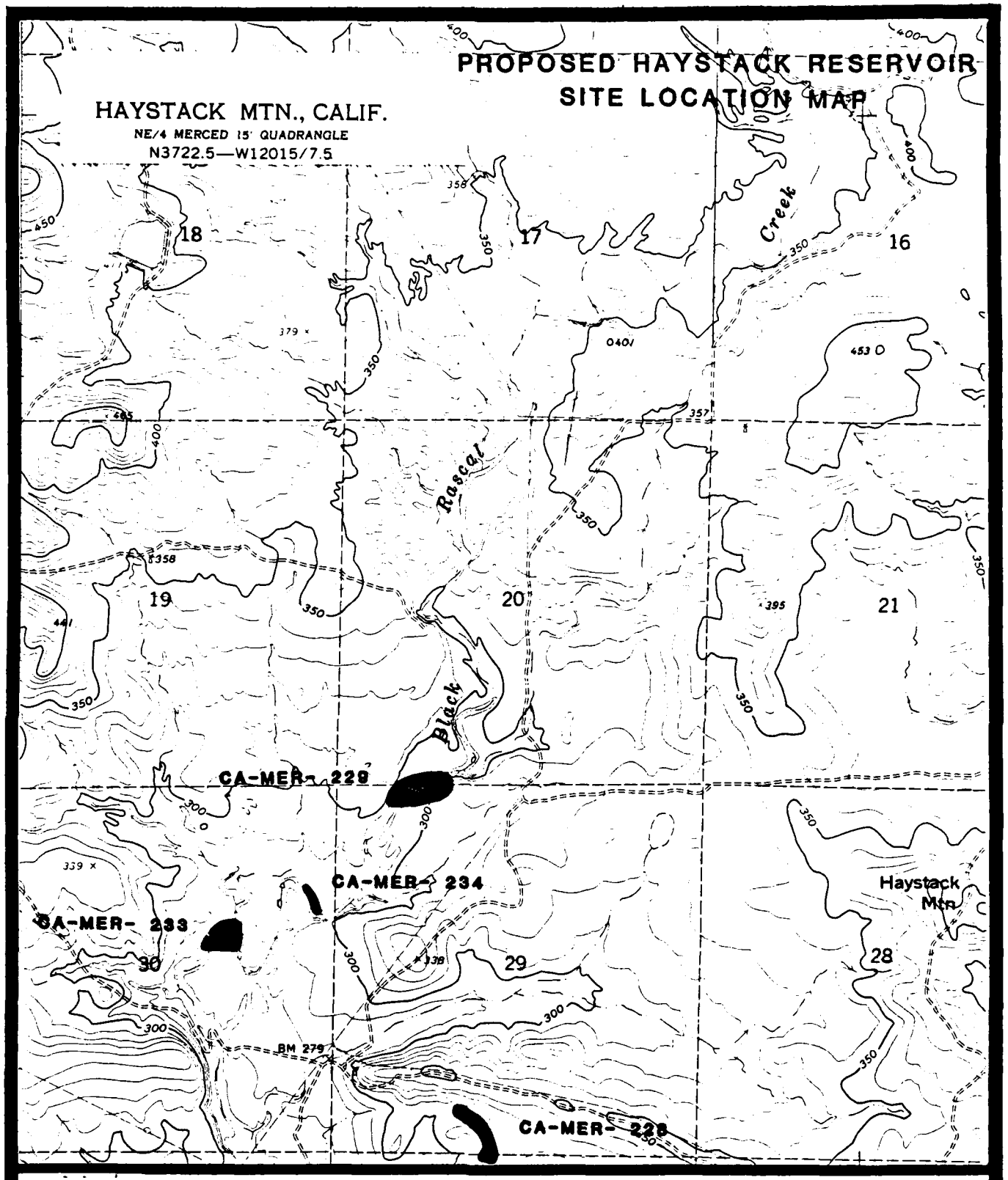
Test Hole #2

Depth:	0-30cm, sterile
Soil:	clayey silt, grey-brown, sterile
Artifacts:	none
Location:	10 degrees, 44 meters from datum

Test Hole #3

Depth:	0-30cm, sterile
Soil:	clayey silt loam, grey-brown, sterile
Artifacts:	none
Location:	8 degrees, 12 meters from datum

PROPOSED HAYSTACK RESERVOIR SITE LOCATION MAP



MAP 3

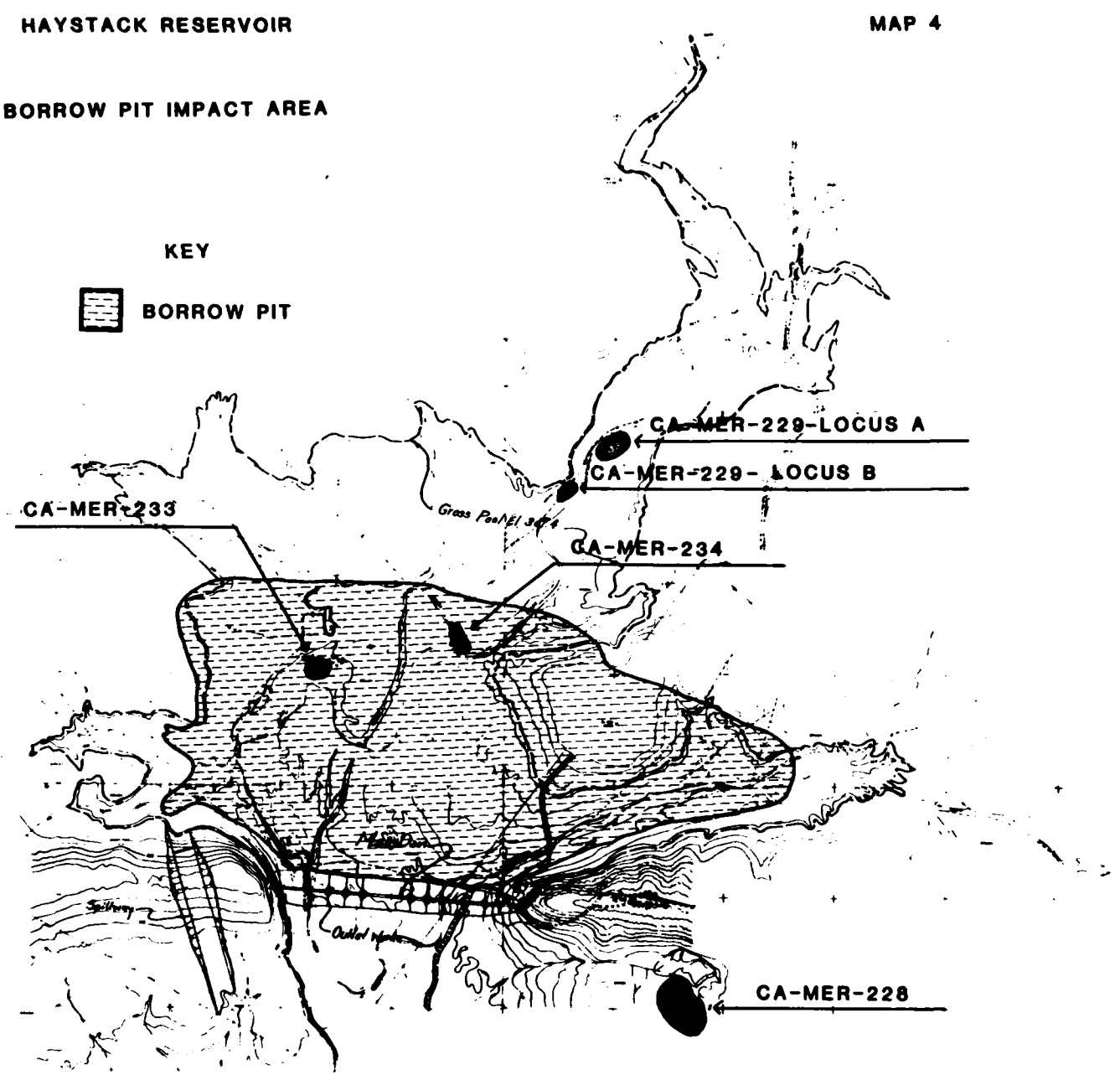
HAYSTACK RESERVOIR

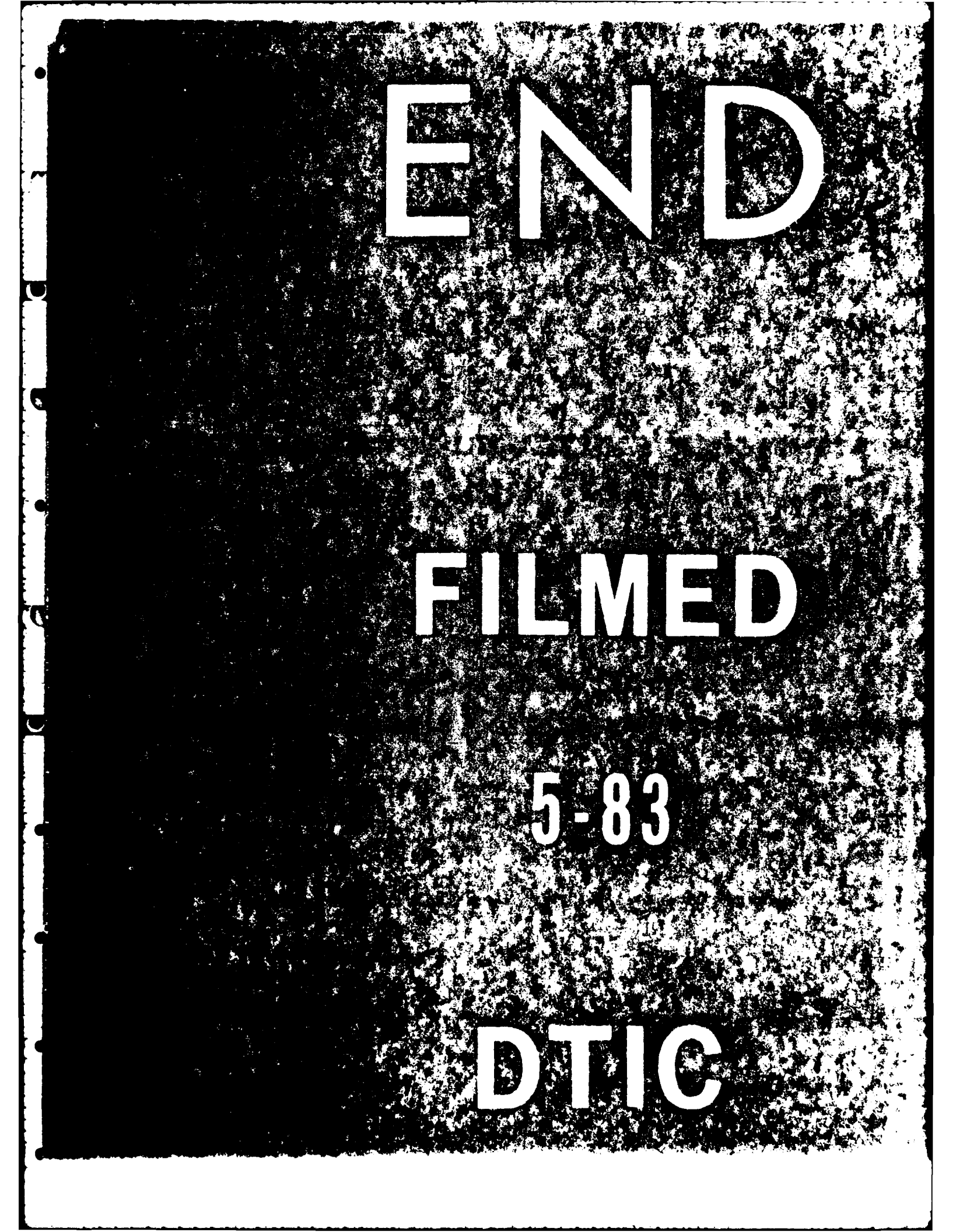
MAP 4

BORROW PIT IMPACT AREA

KEY

BORROW PIT

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